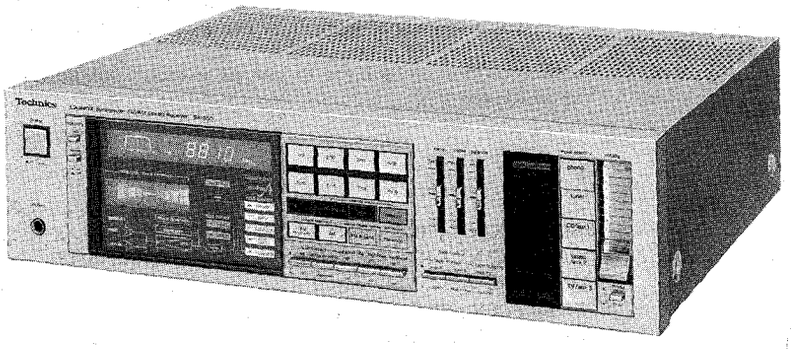
ORDER NO. HAD8408

Service Manual

QUARTZ Synthesizer
FM/AM Stereo Receiver

Receiver
SA-850



Color

(K)...Black Type
(S)...Silver Type

Color	Area
(S)	[PA]...Far East PX.
(S)	[PE]...European Military.
(K) (S)	[PC]...European Audio Club.

05100238 91004988 16
SM-SA850MM 1 ST
SVC MNL ... PX/MM/AC ...

SPECIFICATIONS

(IHF '78)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output
20 Hz~20 kHz both channels driven
0.005% total harmonic distortion
100W per channel (8 ohms)

1 kHz continuous power output	
both channels driven	
0.005% total harmonic distortion	
	105W per channel (8 ohms)
Dynamic headroom	1.8 dB (8 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.005% (8 ohms)
half power at 20 Hz~20 kHz	0.005% (8 ohms)
half power at 1 kHz	0.001% (8 ohms)
SMPTE intermodulation distortion	0.01% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ±0.8 dB
CD/AUX 1, VIDEO/AUX 2, TV/AUX 3, TAPE 1, TAPE 2/EXT	5 Hz~100 kHz −3 dB
Input sensitivity	
PHONO	0.25 mV (2.5 mV, IHF '66)
CD/AUX 1, VIDEO/AUX 2, TV/AUX 3, TAPE 1, TAPE 2/EXT	15 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO	74 dB (81 dB, IHF '66)
CD/AUX 1, VIDE/AUX 2, TV/AUX 3, TAPE 1, TAPE 2/EXT	77 dB (95 dB, IHF '66)
Maximum input voltage	
PHONO	170 mV (170 mV, 1 kHz)
Input impedance	
PHONO	47 kilohms
CD/AUX 1, VIDEO/AUX 2, TV/AUX3, TAPE 1, TAPE 2/EXT	22 kilohms
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
High filter	7 kHz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Low frequency damping factor	40 (8 ohms)
	20 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

■ FM TUNER SECTION

Frequency range	87.9~107.9 (87.50~108.00) MHz
Sensitivity	10.8 dBf (1.9 μV, IHF '58)
50 dB quieting sensitivity	
MONO	16.1 dBf (3.5 μV IHF '58)
STEREO	38.3 dBf (45 μV IHF '58)
Total harmonic distortion	
100 Hz	0.05% (MONO), 0.07% (STEREO)
1 kHz	0.04% (MONO), 0.06% (STEREO)
6 kHz	0.1% (MONO), 0.20% (STEREO)
S/N	
MONO	78 dB
STEREO	72 dB
Frequency response	20 Hz~15 kHz, +1 dB, −2 dB
Alternate channel selectivity	
normal	±400 kHz 55 dB
	±300 kHz 25 dB
super narrow	±200 kHz 25 dB
Capture ratio	1 dB
Image rejection at 98 MHz	75 dB
IF rejection at 98 MHz	100 dB
Spurious response rejection at 98 MHz	100 dB
AM suppression	55 dB
Stereo separation	
1 kHz	45 dB
10 kHz	35 dB
Carrier leak	
19 kHz	−40 dB
38 kHz	−55 dB
Antenna terminals	300 ohms (balanced)
	75 ohms (unbalanced)

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

A-850

■ AM TUNER SECTION

Frequency range	530~1620 (522~1611) kHz
Sensitivity	20 μV, 300 μV/m
Selectivity	55 dB
Image rejection at 1000 kHz	40 dB
IF rejection at 1000 kHz	40 dB

■ GENERAL

Power consumption	500W
Power supply	AC 110V/120V/220V/240V, 50/60 Hz
Dimensions (W×H×D)	430 × 120 × 353 mm (16-15/16" × 4-23/32" × 13-29/32")
Weight	10.4 kg (22.9 lb.)

Notes:

1) Total harmonic distortion is measured by the digital spectrum analyzer (HP. 3045 system).
2) This unit is equipped with an FM/AM allocation selector on the rear panel. The specifications shown above are correct with this selector set to the "FM 0.2 MHz/AM 10 kHz" position. If it is set to the "FM 0.05 MHz/AM 9 kHz" position, however, the FM frequency range becomes 87.50~108.00 MHz, and the AM frequency becomes 522~1611 kHz.

(Specifications are subject to change without notice for further improvement.)

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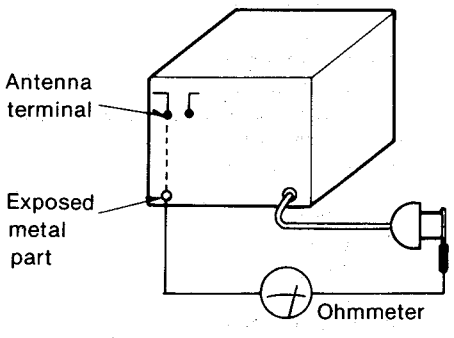
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

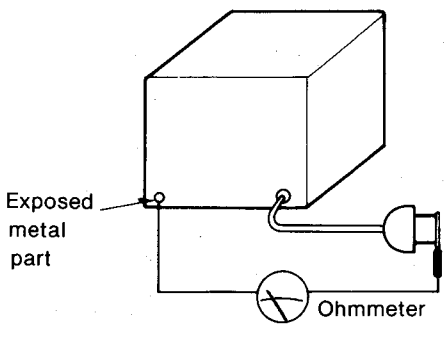
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ HOW TO PRESET RADIO BROADCAST FREQUENCIES

This unit is used to preset as many as 16 radio broadcast frequencies: FM/AM random presetting. After broadcast frequencies have been preset as described below, any desired station can be quickly and easily selected by simply touching one button.

• Memory presetting

There are two types of memory presetting: automatic and manual. Select whichever is preferred.

1. Automatic presetting:
Beginning at the frequency indicated by the digital display, the FM broadcasting stations and AM broadcasting stations will be automatically preset to "channels" 1 through 8 for FM and 9 through 16 for AM, respectively.

Important!

AM loop antenna

This antenna must be installed to receive AM broadcasts.

Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

2. Manual presetting:
Stations can be freely preset to any desired channel.

Before memory presetting

Each button is used to preset two stations.

Presetting front channels (CH 1~8)

Press momentarily.

Presetting back channels (CH 9~16)

Press slightly longer.

• Automatic memory presetting

❶ • To preset an FM station: press the "FM" button.
Note: If the button is pressed slightly longer, the frequency now tuned is shifted +25 kHz (allocation switch setting : FM 0.05 MHz/AM 9 kHz).

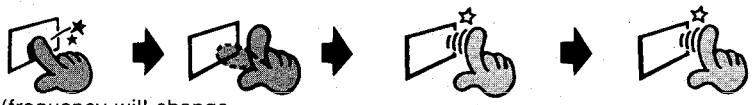
• To preset an AM station: press the "AM" button.

❷ • To preset FM broadcasting stations: Set to 87.9 MHz (or 87.50 MHz).
• To preset AM broadcasting stations: Set to 530 kHz (or 522 kHz).

① Press the button and hold slightly (frequency will change continuously).

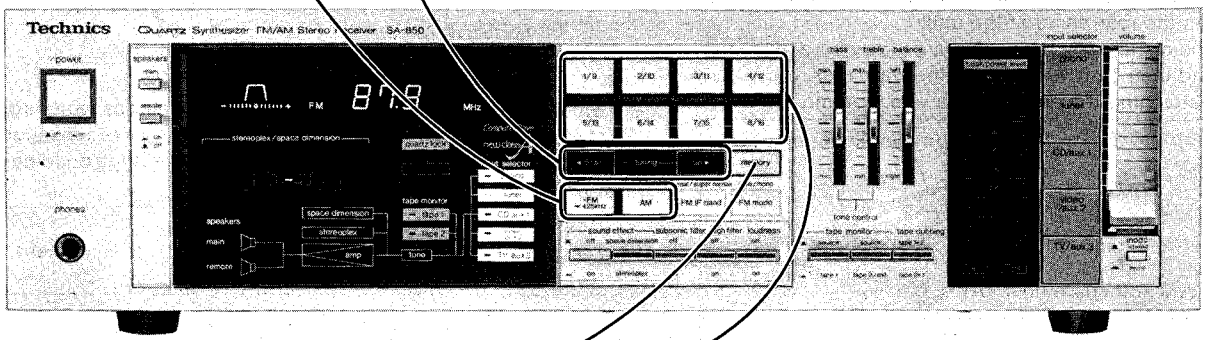
② Release it at 87.9 MHz (or 87.50 MHz) for FM or 530 kHz (or 522 kHz) for AM, and then press the button again momentarily (frequency change will stop).

③ Press the button momentarily (frequency will change each time the button is pressed), and tune to one of the above frequencies.



(frequency will change continuously).

(frequency change will stop).



❸ Press. When the frequency indication begins to change, release.

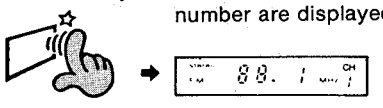
(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)

❹ Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the station memory file sheet.

To check the front channels (CH 1~8):

Press momentarily.

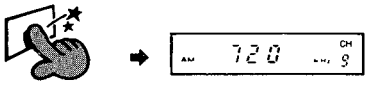
Frequency stored in the memory and channel number are displayed.



To check the back channels (CH 9~16):

Press slightly longer.

Frequency stored in the memory and channel number are displayed.



Notes:

1. In areas where there are less than 8 FM stations, the remaining channels (through channel 8) will be left empty. The empty channels can be filled by using manual memory presetting.
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

• Manual memory presetting

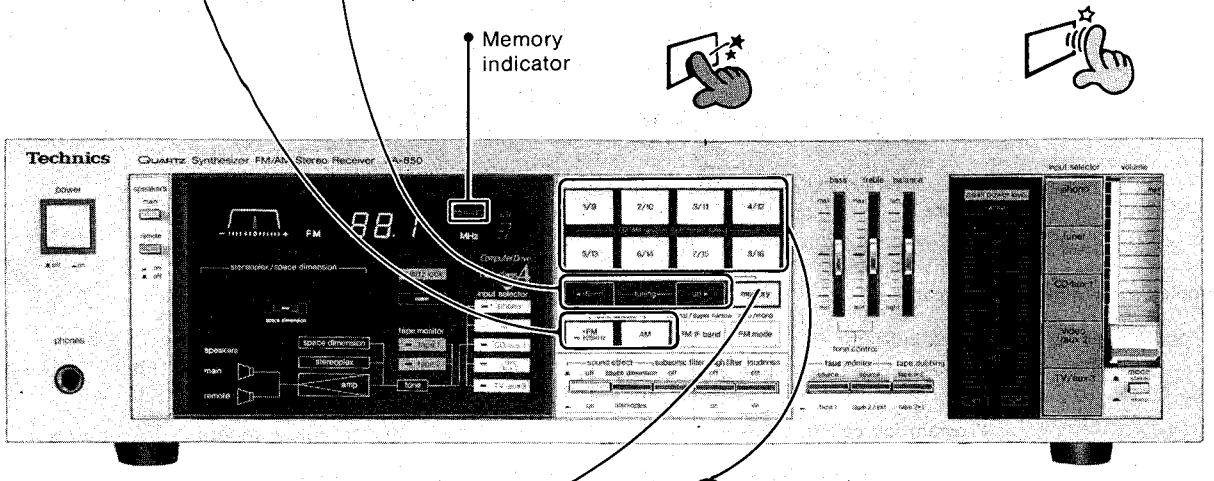
❶ To preset an FM station: press the "FM" button.

Note: If the button is pressed slightly longer, the frequency now tuned is shifted +25 kHz (allocation switch setting : FM 0.05 MHz/AM 9 kHz).

To preset an AM station: press the "AM" button.

❷ Press the appropriate tuning button to tune to the desired broadcast.

- **Auto tuning**
  Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.
- **Manual tuning**
  Press the button momentarily and tune to the desired station (the frequency will change each time the button is pressed). broadcasting station whose frequency is located on a 0.025 MHz step.



❸ Press momentarily, and then release.

(The memory indicator will illuminate for approximately 4 seconds.)

Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically.
To stop the automatic memory presetting, once again press either the "up" button or the "down" button.

❹ While the memory indicator is illuminated, press the button of the desired channel.

- **To preset channels 1 through 8:**
  Press the button momentarily, and then release.
- **To preset channels 9 through 16:**
  Press the button slightly longer, and then release.

Note:
1. If the memory indication illumination stops before you press the button, once again repeat step (5) and then step (6).
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

❺ Enter the name (call sign, etc.) of the preset broadcasting station on the file sheet (above).

This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (2) through (5).

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed.

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuity damage if, for example, the positive and negative speaker connection wires are "shorted". The protection circuitry may also function if a speaker system with an impedance much below the rated impedance of this unit is connected.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note

When the protection circuitry functions the unit will not operate unless the power is first turned off and then on again.

■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power, Discharge both power supply capacitors (C702, C703, 12000μF) through a 10 ohm, 5W resistor to ground. Do not short between C702 and C703. It may damage the capacitors.
2. After completion of repair, slowly apply the primary voltage by using a variac to avoid over current. Current consumption at 60Hz/50Hz in no signal mode should by shown below with respect to supply voltage 110V/120V/220V/240V.

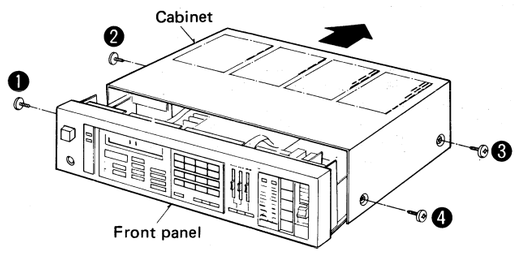
Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50Hz	320~570mA	270~520mA	120~370mA	100~350mA
	60Hz	300~550mA	250~500mA	100~350mA	80~330mA

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1 — **How to remove the cabinet**

Procedure 1

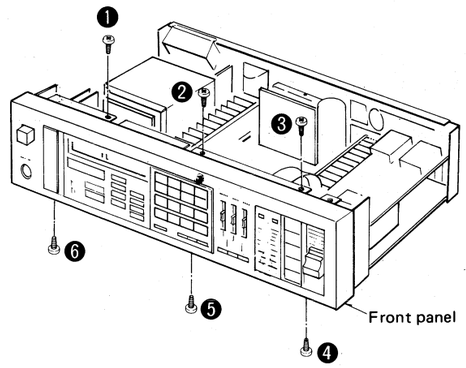
- Remove the 4 setscrews. (❶~❹)



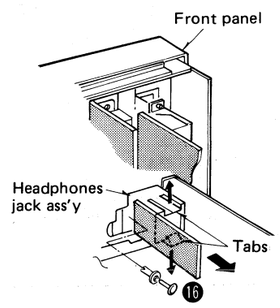
Ref. No. 2 — **How to remove the front panel**

Procedure 1 ➡ 2

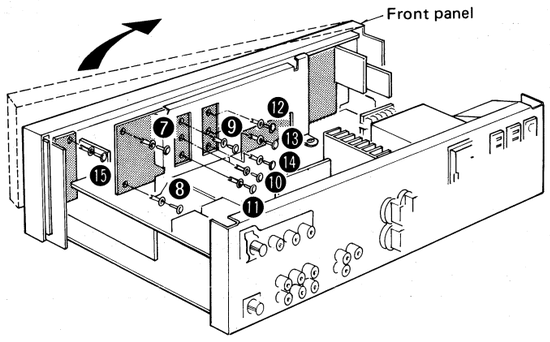
- Remove the 6 setscrews. (❶~❻)



1. Remove the 1 rivet pin. (⓰)
2. Release the 2 tabs aside.



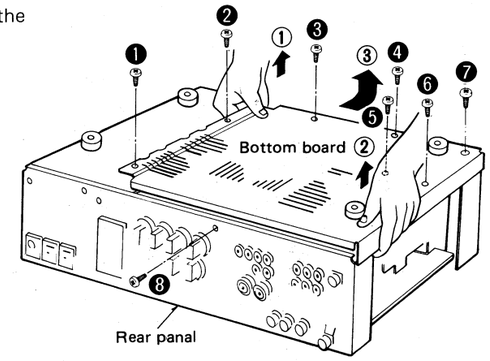
- Remove the 9 rivets. (❼~⓯)



Ref. No. 3 — **How to remove the bottom board**

Procedure 3

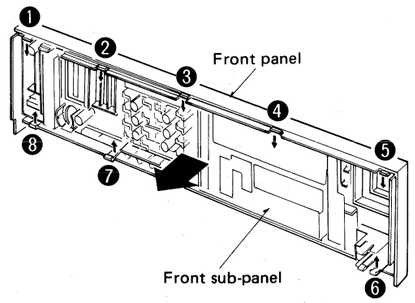
1. Remove the 8 setscrews.(❶~❽)
2. Remove the bottom board in the direction of the arrow ①➡②➡③.

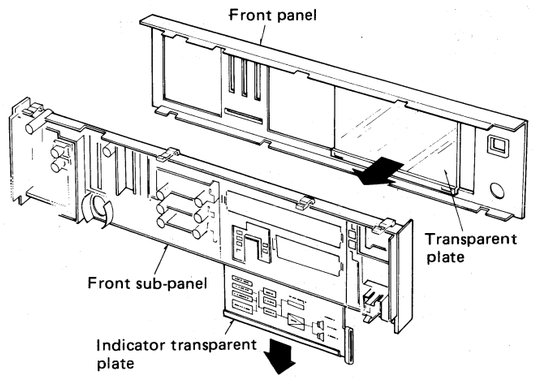


Ref. No. 4 — **How to remove transparent plate**

Procedure 1➡2➡4

- Release the 8 tabs. (❶~❽)

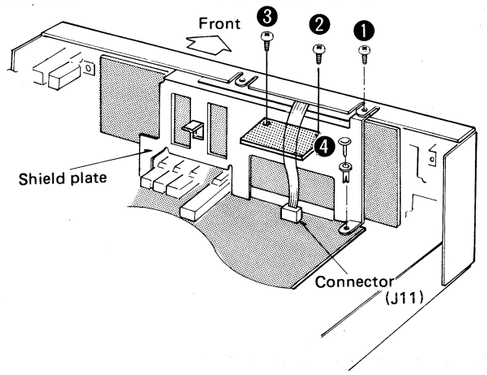




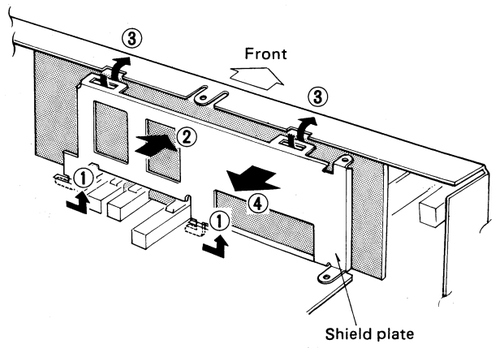
Ref. No. 5 — **How to remove the shield plate**

Procedure 1➡2➡5

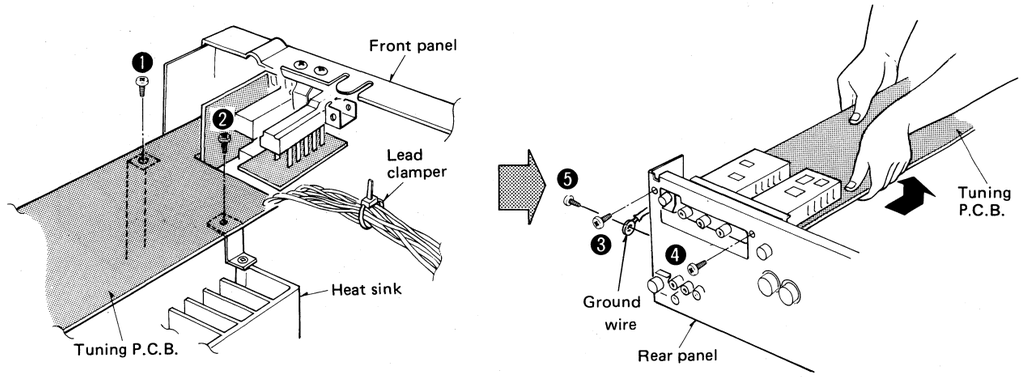
1. Remove the 3 setscrews and rivet. (❶~❹)
2. Remove the connector. (J11)



- Remove the shield plate in the direction of the arrow ①➡②➡③➡④.



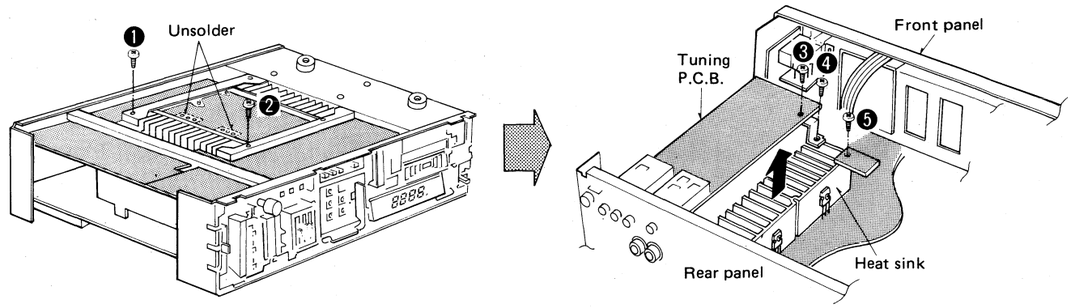
Ref. No. 6	How to remove the tuning P.C.B.
Procedure 1 ➡ 6	1. Remove the 2 setscrews. (❶,❷) 2. Cut off the 1 lead clamper by nippers.



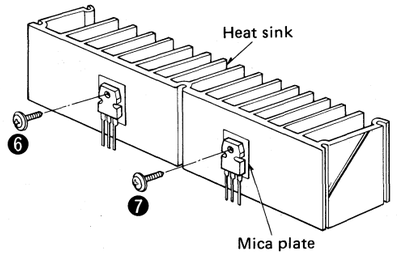
- Remove the 3 setscrews. (❸,❹,❺)

Ref. No. 7	How to remove the power amp. transistors
Procedure 1 ➡ 3 ➡ 7	1. Remove the 2 setscrews. (❶,❷) 2. Unsolder the power transistors.

- Remove the 3 setscrews. (❸~❺)



- Remove the 2 setscrews. (❻,❼)



*** When fitting it, apply silicone compound (SZZ0L15) to both sides of mica plate.**

■ MEASUREMENTS AND ADJUSTMENTS

[TUNER SECTION]

Note: AM OSC coil (L204) have been already adjusted, and require no adjustment.

AM ADJUSTMENT

*** Setting and Equipment used**
1. DC and AC electronic voltmeters (EVM)
2. AM signal generator (AM-SG):
3. Set Band selector to "AM" position.
4. Maintain line voltage at rated voltage.
5. Set FM/AM allocation selector to "FM 0.2 MHz/AM 10 kHz" position.
6. Output of signal generator should be no higher than necessary to obtain an output reading.
7. Use a non-metal screwdriver for the adjustment.

Step No.	AM SIGNAL GENERATOR CONNECTION	AM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input) (Refer to Fig. 1)	450 kHz (30% Mod. with 400 Hz)	Frequency of non-inter-ference	Connect AC EVM or scope to "speaker" terminal.	T201 (ANT 1st IFT) T202 (AM 2nd IFT)	* Adjust the input frequency and adjustment points so that the output becomes maximum.
	AM-RF ADJUSTMENT					
2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input) (Refer to Fig. 1)	610 kHz (30% Mod. with 400 Hz)	610 kHz	Connect AC EVM or scope to "speaker" terminal.	L203 (ANT Coil)	1. Adjust for maximum output. 2. Adjust core of L203 by screwdriver.
3		1500 kHz (30% Mod. with 400 Hz)	1500 kHz	Connect AC EVM or scope to "speaker" terminal.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat steps (2) and (3) until the frequency correctly matches the frequency display.

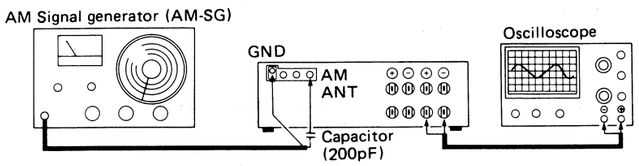
FM ADJUSTMENT

*** Setting and Equipment used**
1. FM signal generator (FM-SG).
2. Distortion analyser
3. Oscilloscope
4. DC electronic voltmeters (EVM).
5. Frequency counter (19 kHz and 108 MHz measurable).
6. Set band selector to "FM" position.
7. Set FM mode selector to "mono" position.
8. Set FM IF band selector to "normal" position.
9. Set FM/AM allocation selector to "FM 0.2 MHz/AM 10 kHz" position.
10. Maintain line voltage at rated voltage.

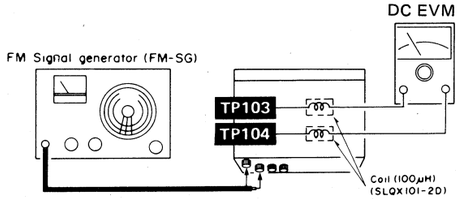
*** Preparation of FM signal generator (FM-SG)**
1. The standard input of the set is 60 dB (1 mV), 400 Hz, 100% modulation (Because of attenuation, using coaxial cables, SG output must be 6 dB plus. That is, when input 60 dB, SG output is to be 66 dB.)

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	FM MONO DISTORTION ADJUSTMENT					
4	Connect FM-SG to FM antenna terminal referring to Fig. 2. (Apply 60 dB to antenna terminal.)	100.1 MHz (100% Mod. with 400 Hz)	100.1 MHz	Connect DC EVM between TP103 (–) and TP104 (+) through choke coil. (Refer to Fig. 2)	T101 (Discri. IFT)	1. Adjust T101 core so that voltage measured in signal mode is 0 mV in 300 mV range. 2. Adjust T102 core so that distortion of right and left channels are minimized.
5				Connect distortion analyser to "speaker" terminal.	T102 (Discri. IFT)	
	FM MPX V.C.O. ADJUSTMENT					
6	USING A FREQUENCY COUNTER 1. 100.1 MHz, 60 dB non-modulated mono signal applied to set. 2. FM mode switch to "auto" position. 3. Connect frequency counter to TP301 through capacitor (50V, 1μF) and resistor (100kΩ) referring to Fig. 3. 4. Adjust **VR301** to 19 kHz ± 30 Hz.			USING ALTERNATE SYSTEM 1. Apply stereo signal from generator or stereo station to tuner, 2. Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in Fig. 4.		

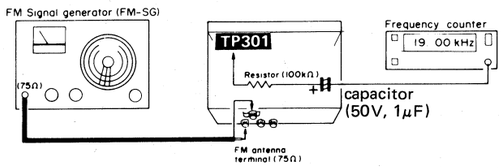
	FM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
	MUTING ON LEVEL ADJUSTMENT					
7	Connect FM-SG to FM antenna terminal referring to Fig. 5. (Apply 20 dB to antenna terminal.)	100.1 MHz (100% Mod. with 1 kHz)	100.1 MHz	Connect oscilloscope to "speaker" terminal.	VR201 (Muting on level)	1. Set FM mode selector to "FM auto" position. 2. Adjust VR201 so that signal output is delivered. (Check to see that delivery of output is discontinued with input level lowered by 1 ~ 2 dB.)
	SEPARATION ADJUSTMENT					
8	Connect FM-SG to FM antenna terminal referring to Fig. 5. (Apply 60 dB to antenna terminal.) (Pilot 10% Mod. stereo signal.)	100.1 MHz (100% Mod. with 1 kHz) (L or R mode)	100.1 MHz	Connect AC EVM or oscilloscope to "speaker" terminal.	VR302 (Separation)	1. Set mode switch to "auto" position. 2. Adjust VR302 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode and that L output is minimized in R mode.



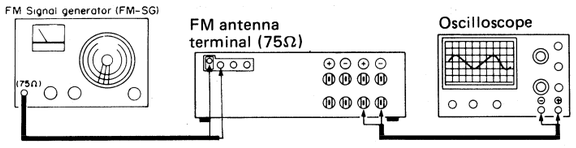
[Fig. 1]



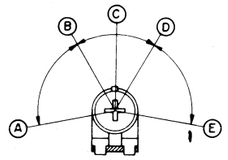
[Fig. 2]



[Fig. 3]



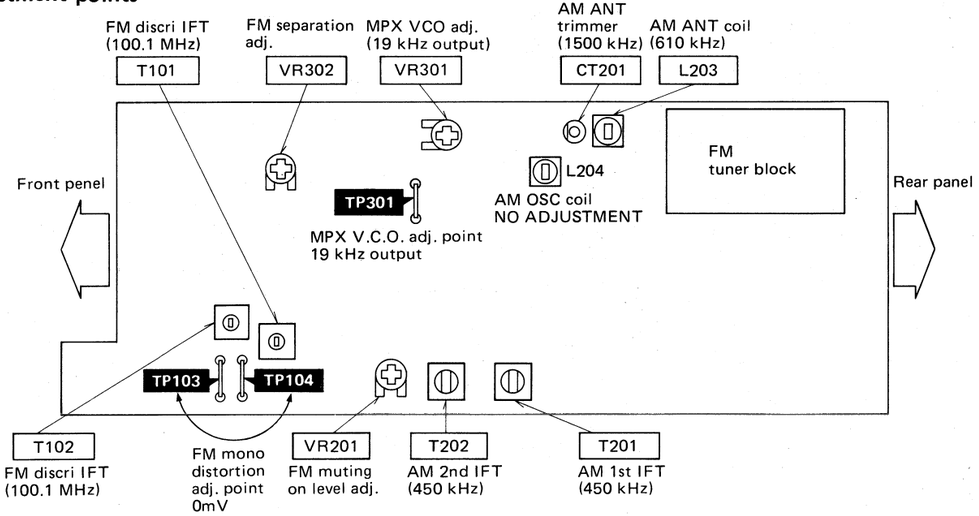
[Fig. 5]



Ⓐ–Ⓑ,Ⓓ–Ⓔ : Stereo OFF position.
Ⓑ–Ⓓ : Stereo ON position. (indicator lighting)
Ⓒ : Adjustment point of pilot circuit

[Fig. 4]

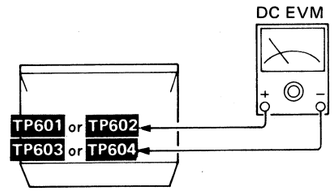
• Adjustment points



[AMPLIFIER SECTION]

Idling (I_{CQ}) Adjustment (after reparing the main amp.) [Fig. 6]

(1) After the repair, set the sound volume to minimum before turning on the power switch, and connect nothing to the speaker terminal.
(2) Completely turn I_{CQ} control (VR601, VR602) counter-clockwise.
(3) Increase the voltage applied to the amplifier gradually from 0V by means of a power supply voltage controller, and make sure of the value in the Figure on page 7 before starting the adjustment.
(4) Connect the DC electronic voltmeter to **TP601** (+) and **TP603** (–) (L ch.) or **TP602** (+) and **TP604** (–) (R ch.).
(5) Adjust VR601 (L ch.) or VR602 (R ch.) so that the voltage is 4 ~ 5 mV about 1 min. after power switch "on".



[Fig. 6]

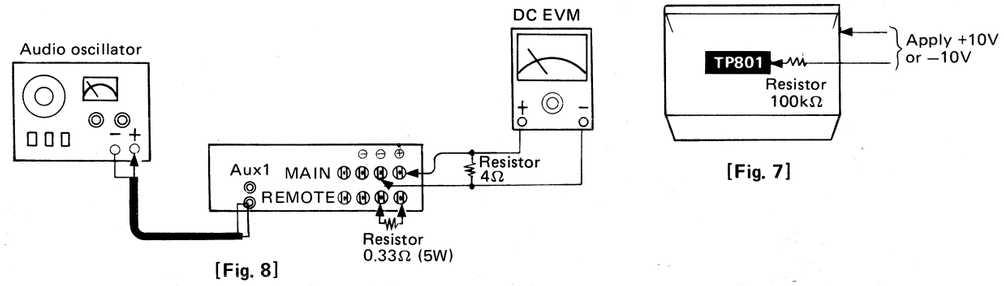
Check of DC detection Circuit [Fig. 7]

(1) Apply DC voltage +10V or –10V to **TP801** (R801 or R802) through 100kΩ resistor.
(2) Make sure, relay is off.

Check of Overload Detection and Protection Circuit [Fig. 8]

(1) Connect 4Ω (resistor or speaker) and AC voltmeter to the main speaker terminal.
(2) Main speaker selector is "on" position.
(3) Connect the audio oscillator to the CD/aux 1 terminal and apply the input signal of 1 kHz to the terminal. Then adjust the output level of the audio oscillator so that the output level of the speaker terminals becomes 5V.
(4) Connect 0.33Ω (5W) resistor to the remote speaker terminal.
(5) Remove speaker selector is "on" position.
(6) Make sure that no output is delivered when main speaker switch is set to "on".

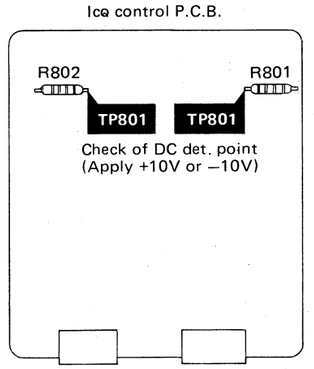
When the protection circuit functions, the unit will not operate unless the power is first turned off and then on again.

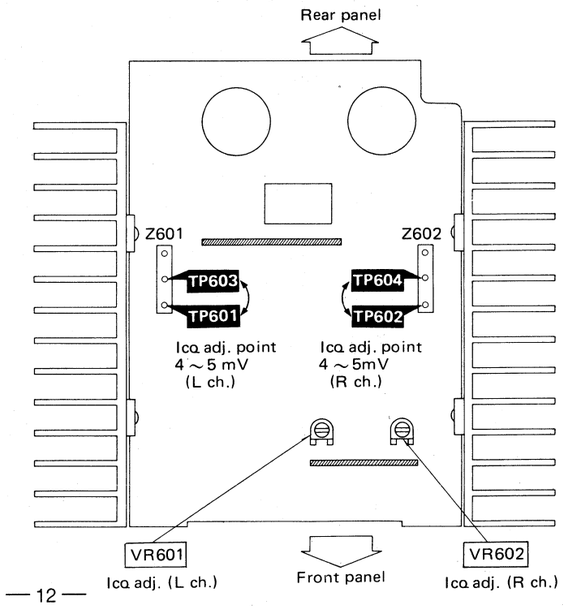


[Fig. 8]

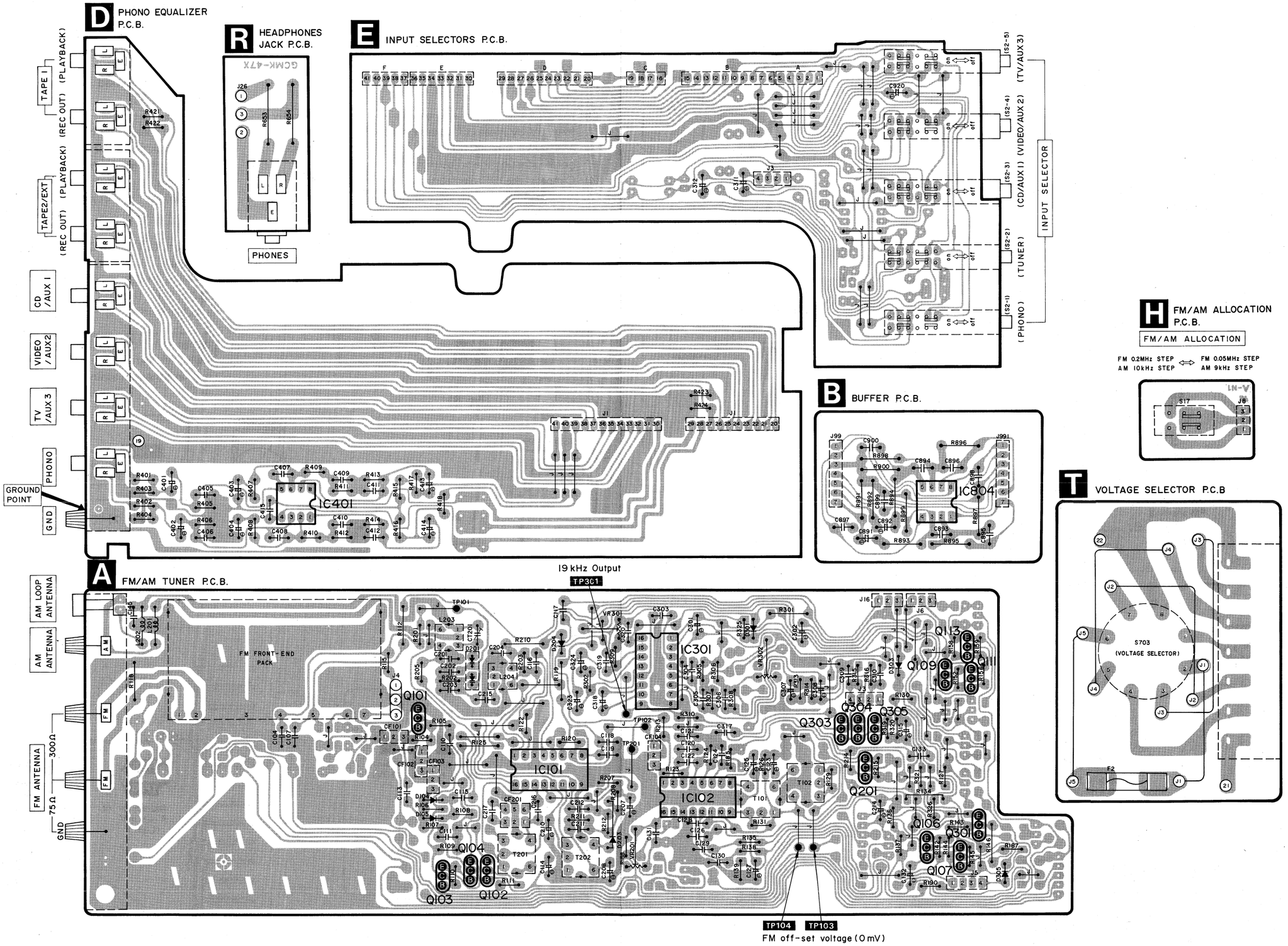
[Fig. 7]

• Adjustment points

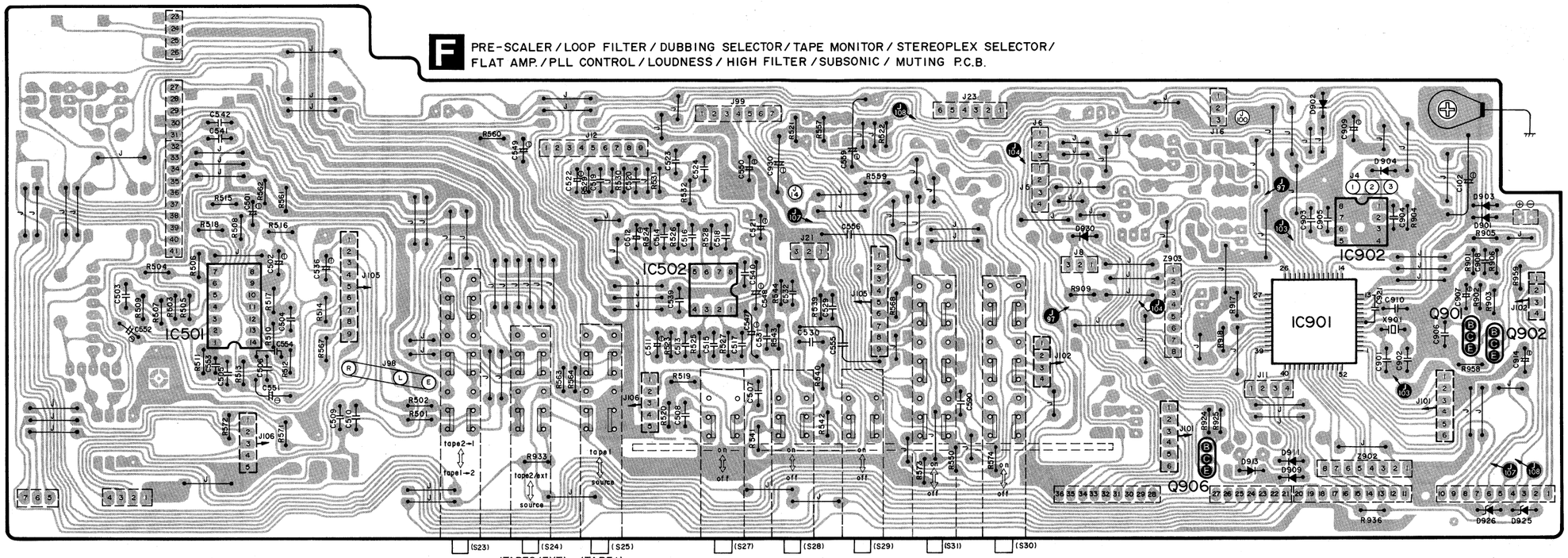




■ PRINTED CIRCUIT BOARDS

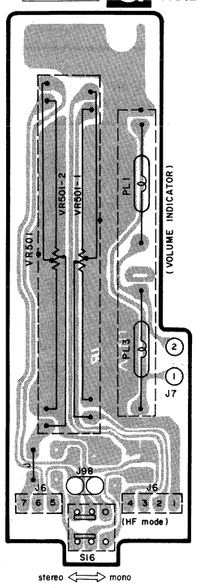


F PRE-SCALER / LOOP FILTER / DUBBING SELECTOR / TAPE MONITOR / STEREOPLEX SELECTOR / FLAT AMP. / PLL CONTROL / LOUDNESS / HIGH FILTER / SUBSONIC / MUTING P.C.B.



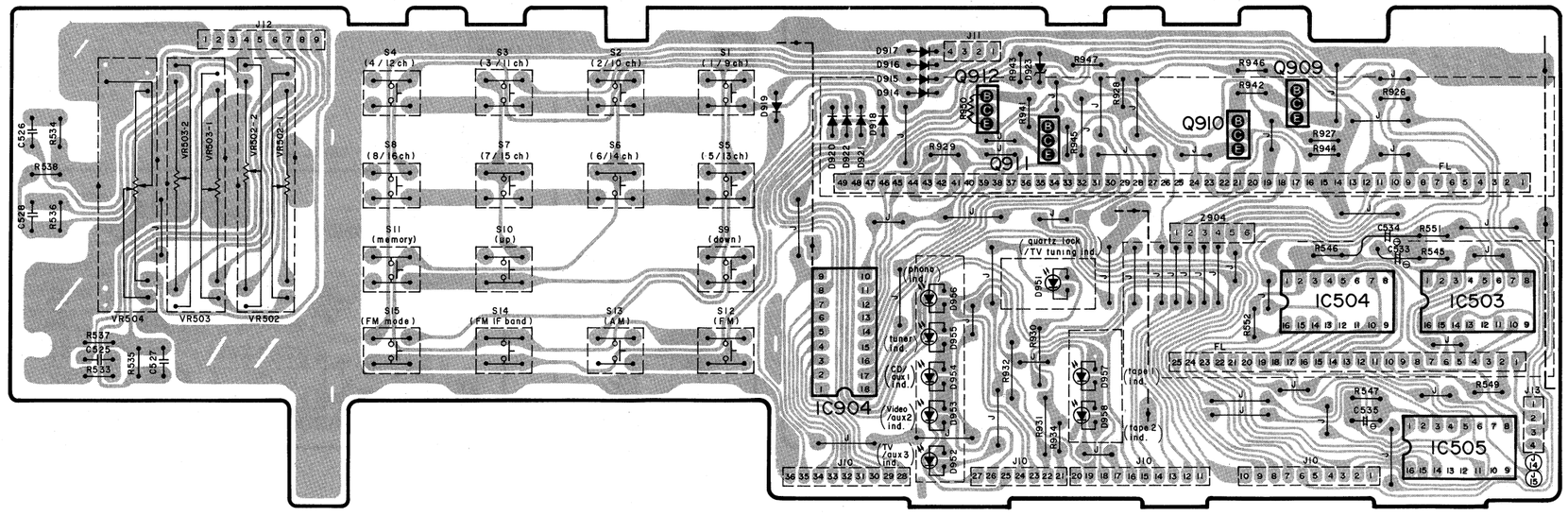
G MODE SELECT P.C.B.

VOLUME

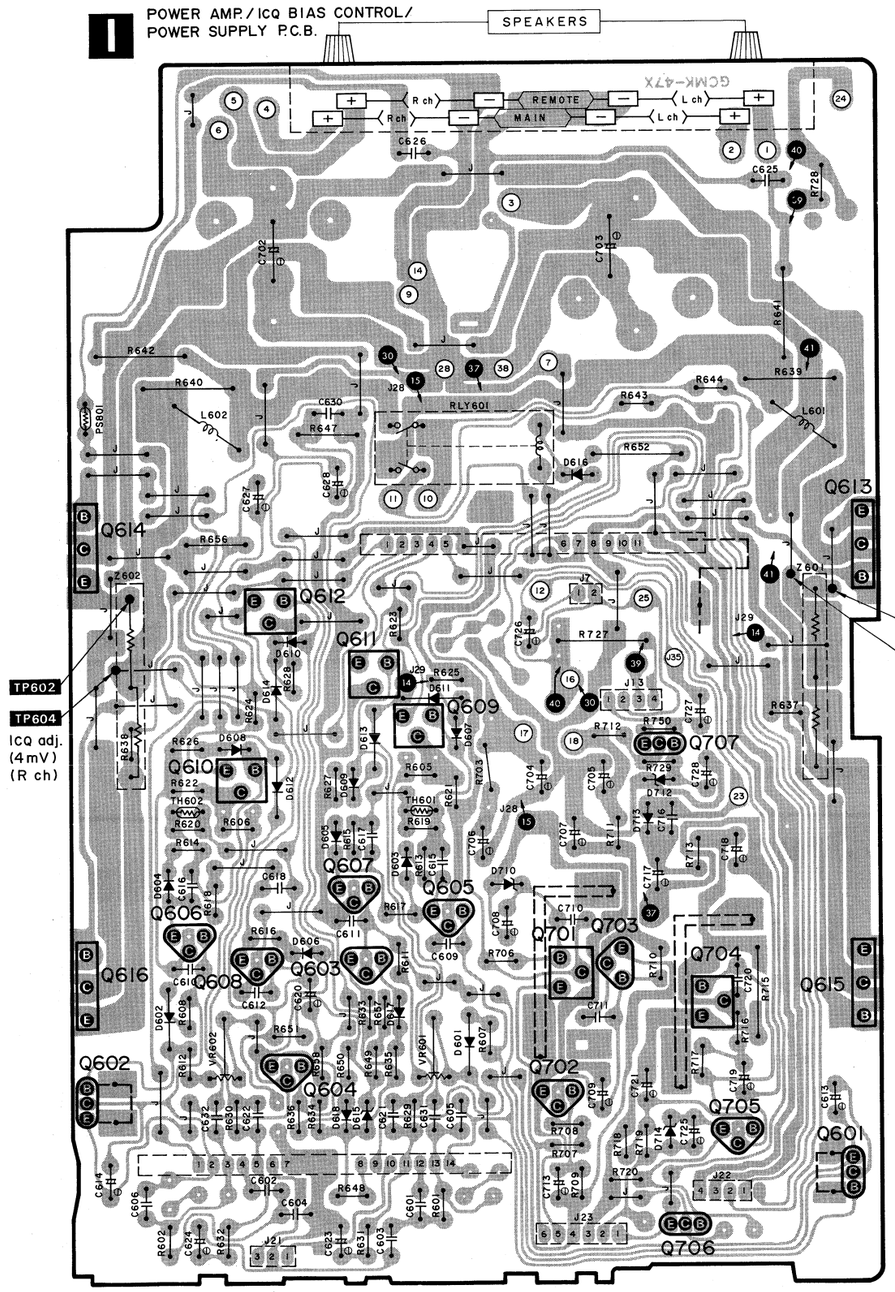


K TONE CONTROL / FL DRIVE / POWER METER DRIVE / STEREOPLEX DRIVE / INPUT SELECTOR IND. / TUNER CONTROL P.C.B.

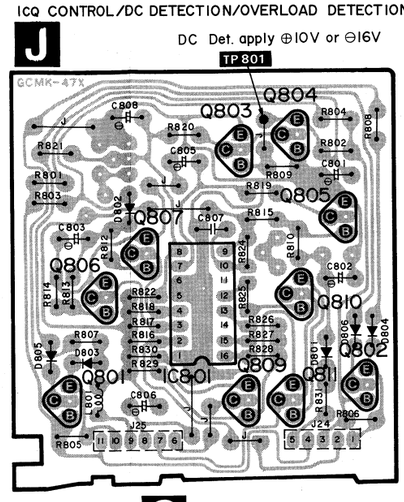
BALANCE TREBLE BASS



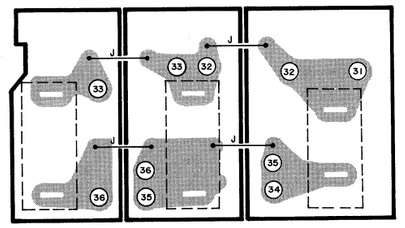
I POWER AMP./ICQ BIAS CONTROL/ POWER SUPPLY P.C.B.



J ICQ CONTROL/DC DETECTION/OVERLOAD DETECTION/RELAY DRIVE P.C.B.

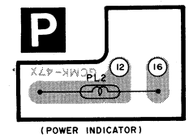


AC OUTLET (UNSWITCHED)

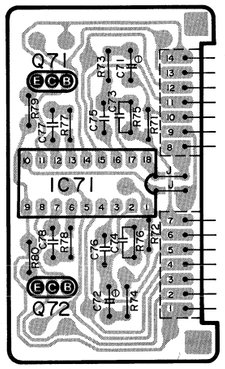


AC IN

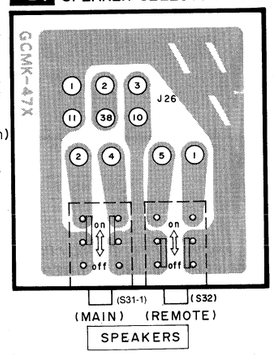
P



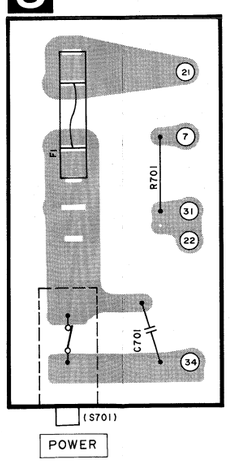
N VOLTAGE AMP. P.C.B



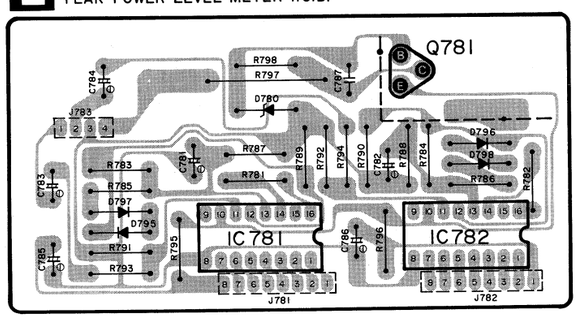
Q SPEAKER SELECTOR P.C.B.



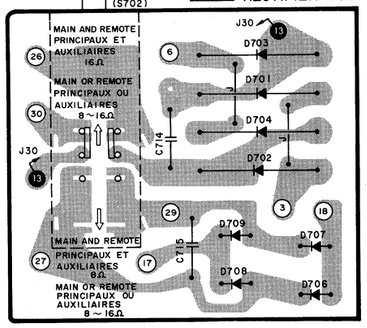
S



L PEAK POWER LEVEL METER P.C.B.

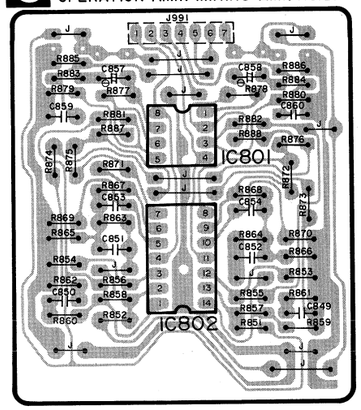


SPEAKER IMPEDANCE

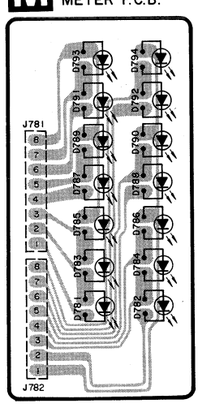

(S702)
MAIN AND REMOTE PRINCIPAUX ET AUXILIAIRES 16Ω
MAIN OR REMOTE PRINCIPAUX OU AUXILIAIRES 8~16Ω
MAIN AND REMOTE PRINCIPAUX ET AUXILIAIRES 8Ω
MAIN OR REMOTE PRINCIPAUX OU AUXILIAIRES 8~16Ω

O SPEAKER IMP. SELECTOR/ RECTIFIER P.C.B.

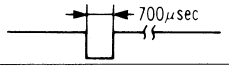
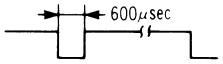
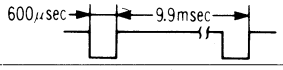
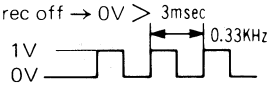
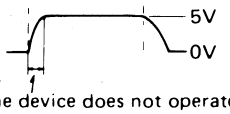
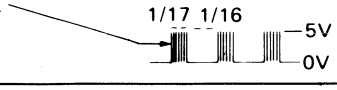
C OPERATION AMP/MIXING AMP. P.C.B.

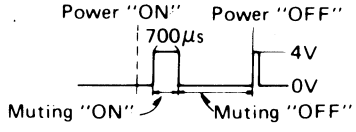
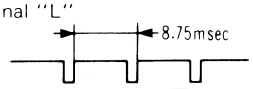
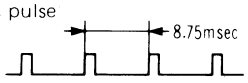
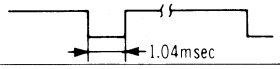
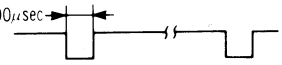
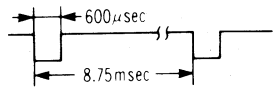


M PEAK POWER LEVEL METER P.C.B.



■ FUNCTION OF TERMINAL (PLL control IC901: SVID1707G517)

PIN No.	I/O	Mark	Description of terminal
1	OUTPUT	D3	Grid 5 control signal "L" 
2	OUTPUT	D2	Grid 4 control signal "L" 
3	OUTPUT	D1	Grid 3 control signal "L" 
4	OUTPUT	CGP	Clock generator port (For recording-check level) <rec on → 1V rec off → 0V > 3msec 
5	INPUT	X1	Connecting terminal for crystal oscillator. The crystal connected is at 4.5MHz.
6	INPUT	X2	
7	–	VDD1	Power supply terminal of the device
8	–	VDD2	VDD for internal A-D converter
9	INPUT	AD2	Not used in this unit
10	INPUT	SD	This input terminal detects the reception of a broadcasting station. The voltage is 5V during reception, and otherwise 0V.
11	INPUT	SL	Signal strength level (0 ~ 2.3V DC)
12	–	GND3	Ground for internal A-D converter
13	–	GND2	Ground for internal PLL stage
14	–	NC	Not used in this unit.
15	OUTPUT	EO2	Not used in this unit.
16	OUTPUT	EO1	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
17	INPUT	CE	Chip enable and reset. This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D7) terminals are off, but the memory is held. Power "ON" Power "OFF"  The device does not operate during this period.
18	INPUT	FM IN	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by prescaler.
19	INPUT	AM IN	AM OSC input from IC101. Input terminal for AM OSC output. 1 MHz ~ 2 MHz
20	OUTPUT	PSC	Reference signal for pre-scaler. This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (18) until the content of the inside swallow counter is 0. When the swallow counter comes to 0, the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16. Pulse two times larger than the value that cannot be divided by VCO/16. 

PIN No.	I/O	Mark	Description of terminal
21	–	GND	Ground for CPU
22	OUTPUT	PC3	Not used in this unit
23	OUTPUT	PC2	Not used in this unit
24	OUTPUT	RF SW	Not used in this unit.
25	OUTPUT	PC1	Not used in this unit
26	INPUT	INT	This is the interrupt demand signal input terminal. The signal from the control input terminal is put into this terminal, demanding for interruption, then the flow of program will be unconditionally shifted to the address No. 1.
27	OUTPUT	FM/AM	FM/AM switching signal (AM → 5V, FM → 0V)
28	OUTPUT	LW/MONO	Stereo/Monaural switching signal. (Monaural → 5V, Stereo → 0V)
29	OUTPUT	REC	Not used in this unit.
30	OUTPUT	i	Diode matrix scan pulse
31	OUTPUT	j	Not used in this unit
32	OUTPUT	PA2/SI	Not used in this unit
33	–	VDD1	This terminal is connected to Pin 7 at inside stage.
34	OUTPUT	PA1	Not used in this unit
35	OUTPUT	IF SW	Normal/super narrow select for, FM IF signal flow (output "L" – FM IF band is normal output "H" – FM IF band is super narrow)
36	OUTPUT	MUTE	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level. 
37	OUTPUT	D7	Grid 1 control signal "L" 
38	OUTPUT	h	Diode matrix scan pulse 
39	INPUT	K3	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source.
40	INPUT	K2	
41	INPUT	K1	
42	INPUT	K0	
43	OUTPUT	g	Segment signal output terminal for display.
44	OUTPUT	f	
45	OUTPUT	e	
46	OUTPUT	d	
47	OUTPUT	c	
48	OUTPUT	b	
49	OUTPUT	a	
50	OUTPUT	D6	Grid 8 control signal "L" 
51	OUTPUT	D5	Grid 7 control signal "L" 
52	OUTPUT	D4	Grid 6 control signal "L" 

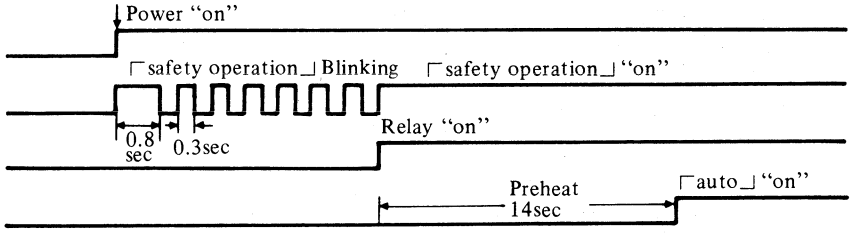
■ FUNCTION OF TERMINAL (ICQ CONTROL IC801: MN1404STE)

No.	Symbol	Name of block	Description of terminal
1	VSS	Power supply input terminal	Grounded. (0V)
2	A13	Input port A	Temperature detection circuit. When 60°C (140°F) sensor of power amplifier operates, "H" is put in causing the outputs of terminals 14 ~ 16 to go "H".
3	A12		When effective output 5V signal sensor of L-ch power amplifier operates, "L" is put in causing the output of terminal 14 to go "H".
4	A11		When effective output 2V signal sensors of both-ch power amplifiers operate, "L" is put in causing the output of terminal 15 to go "H".
5	A10		Not used in this unit.
6	TST	Test input terminal	Terminal for testing LSI. (Ground)
7	$\overline{RST}$	Reset input terminal	All outputs are cleared or reset with input at "L". (It is connected to power supply circuit)
8	SNSO	Sensor input terminal	When overload detection circuit of power amplifier output operates, "L" is put in causing the output of terminal 12 to go "L".
9	VDD	Power supply input terminal	Apply 5V.
10	OSC	OSC input terminal	Clock signal (about 415kHz) can be obtained by internal oscillation circuit.
11	CO5	Output port C	When protection circuit operates, "H" and "L" outputs are repeated and "safety operation" indicator blinks.
12	CO4		Output relay and meter relay turn ON with "H" output.
13	CO3		Indicator "auto" lights up at "H".
14	CO2		ICQ control signal is emitted from A input port (temp. sensor, signal sensor). ("H" output)
15	CO1		
16	CO0		

No.	Symbol	Time chart

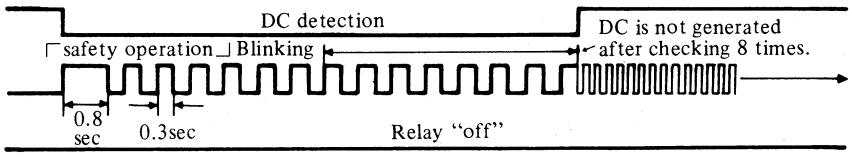
<Power "on" mode>

7	$\overline{RST}$	5V / 0V
11	CO5	5V / 0V
12	CO4	5V / 0V
13	CO3	5V / 0V



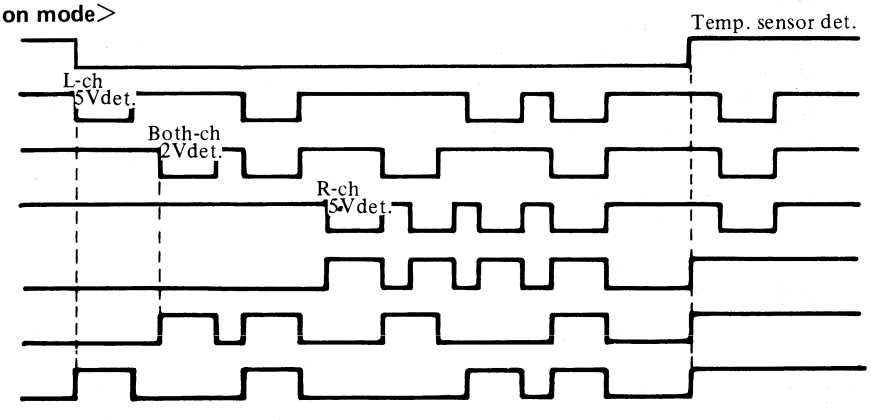
<DC detection or load shorting mode>

8	SNSO	5V / 0V
11	CO5	5V / 0V
12	CO4	0V



<ICQ control operation mode>

2	A13	5V / 0V
3	A12	5V / 0V
4	A11	5V / 0V
5	A10	5V / 0V
14	CO2	5V / 0V
15	CO1	5V / 0V
16	CO0	5V / 0V



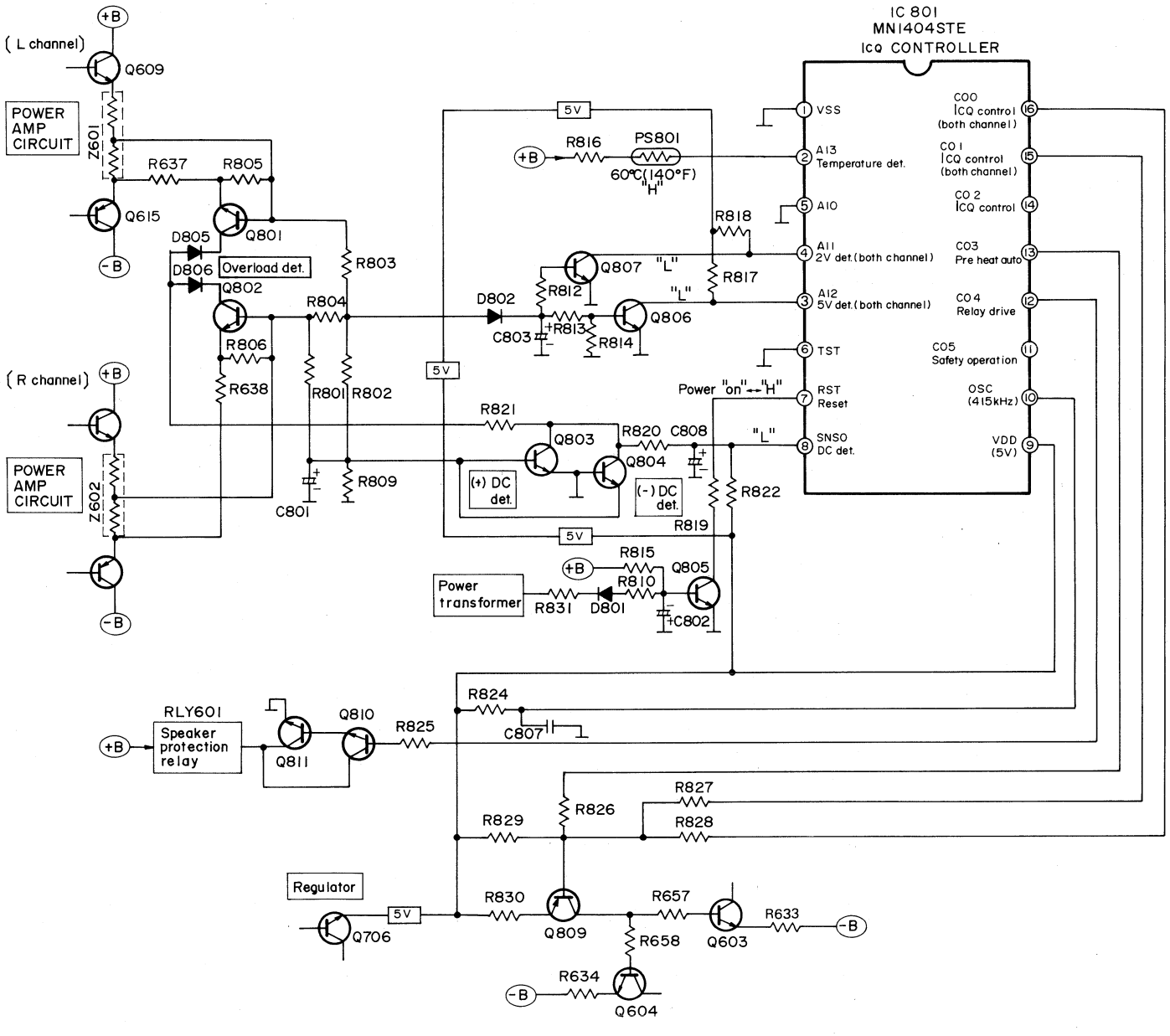
■ DESCRIPTION OF Icq CONTROL CIRCUIT

Signal and temperature detection

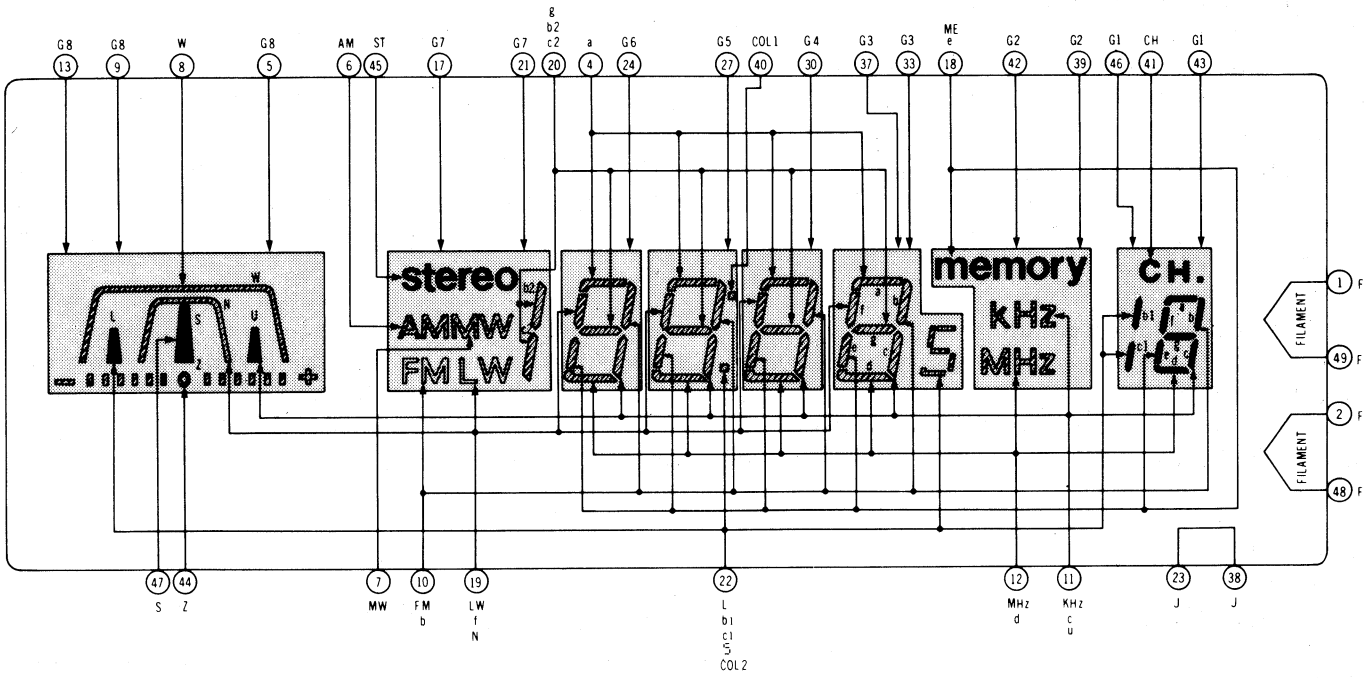
1. Music signal of power amplifier is applied to IC801 terminal ③ of D802 and Q806. When the signal rectified by D802 and C803 exceeds about 5V, Q806 turns "on" causing "L" input to be applied to IC801 terminal ③. Also, when the signal is over 2V, Q807 turns "on" causing "L" put to be applied to IC801 terminal ④. As "L" is put into IC801 terminals ③ and ④, the outputs of terminals ⑮ and ⑯ go "H" to make ICQ control.
2. PS801 is the thermistor (positor) for heat sink temperature detection which detects the temperature [60°C (140°F)] of the heat sink. When the heat sink temperature becomes [60°C (140°F)], the resistance of PS801 increases causing "H" input to be applied to IC801 terminal ②. As "H" is put into IC801 terminal ②, the outputs of IC801 terminals ⑮ and ⑯ go "H" to make ICQ control.

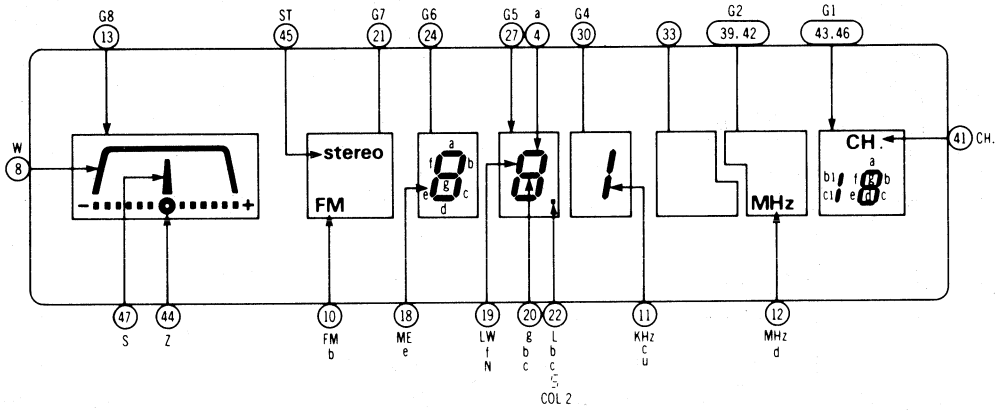
Overload detection circuit

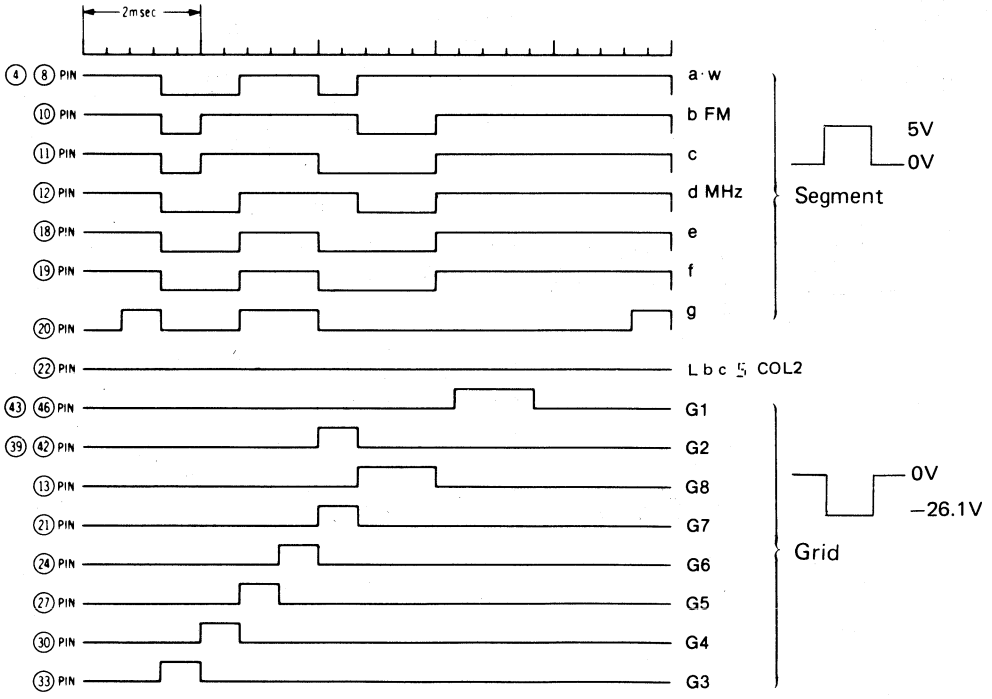
When speaker terminals are shorted, great current flows to R805 (R806) causing the base potential of Q801 (Q802) (overload detection circuit) to increase, then the base voltage of Q801 (Q802) rises and Q801 (Q802) turns "on". With Q801 (Q802) turned ON, both Q803 and Q804 turn "on" causing "L" input to be applied to IC801 terminal ⑧. Then, "L" output is applied to IC801 terminals ⑫ and ⑬. As terminal ⑫ goes "L" Q810 and Q811 turn "off" causing RLY601 to turn "off".



■ FLUORESCENT DISPLAY TUBE (FL) AND TIMECHART

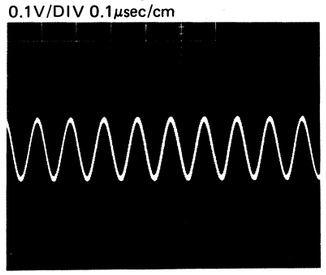




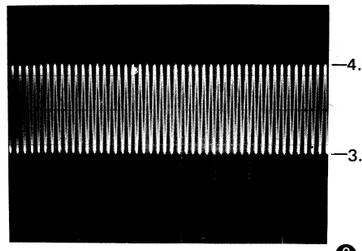


■ WAVEFORM

❶ IC101 ⑤ pin
FM-IF (normal signal)
0.1V/DIV 0.1μsec/cm

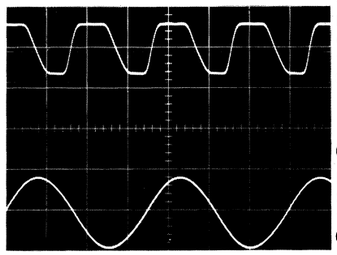


❷ IC902 ② pin
FM-OSC
50mV/DIV (AC) 50 nsec/cm

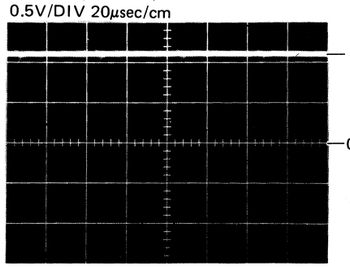


❸ IC901 ⑱ pin
(FM)
1V/DIV
0.1μsec/cm

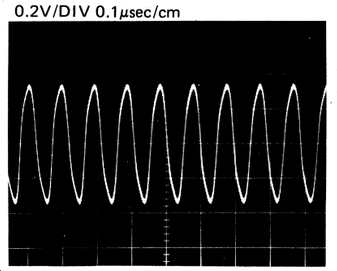
❹ IC901 ⑲ pin
(AM)
1V/DIV
0.2 μsec/cm



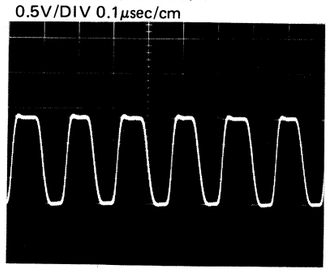
❺ IC901 ⑯ pin
Frequency count-up
0.5V/DIV 20μsec/cm



❻ TP102 (10.7MHz)
0.2V/DIV 0.1μsec/cm



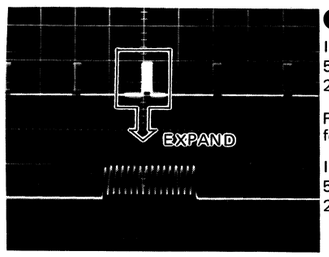
❼ IC902 ⑤ pin
1/16 or 1/17 (FM OSC)
0.5V/DIV 0.1μsec/cm



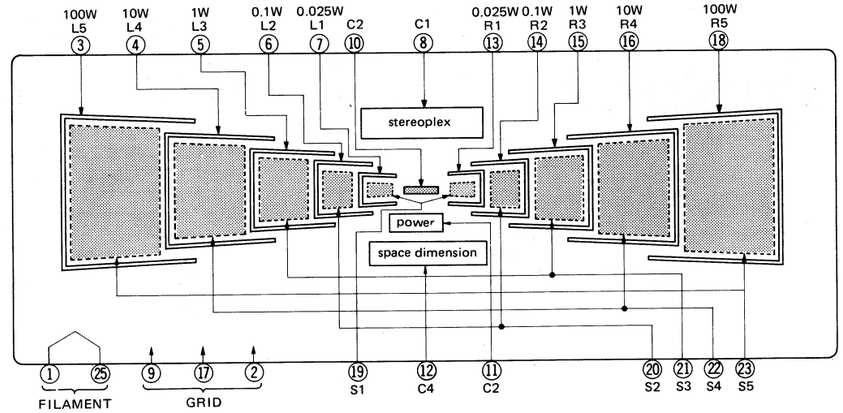
❽ IC902 ⑥ pin
5V/DIV
20μ sec/cm

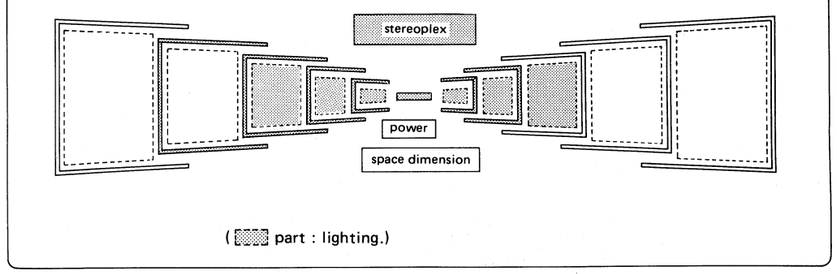
Reference signal/
for pre-scaler

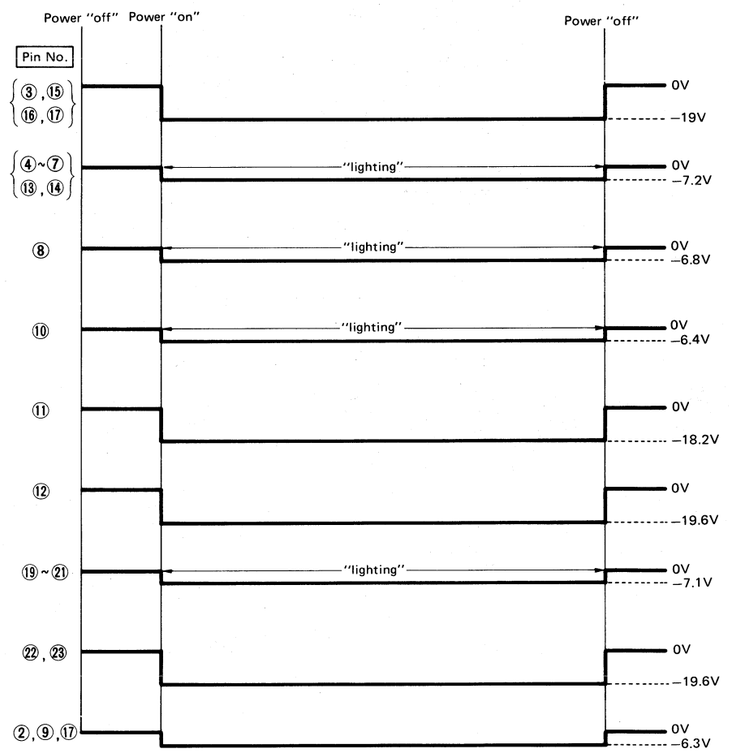
IC902 ⑥ pin
5V/DIV
2μ sec/cm



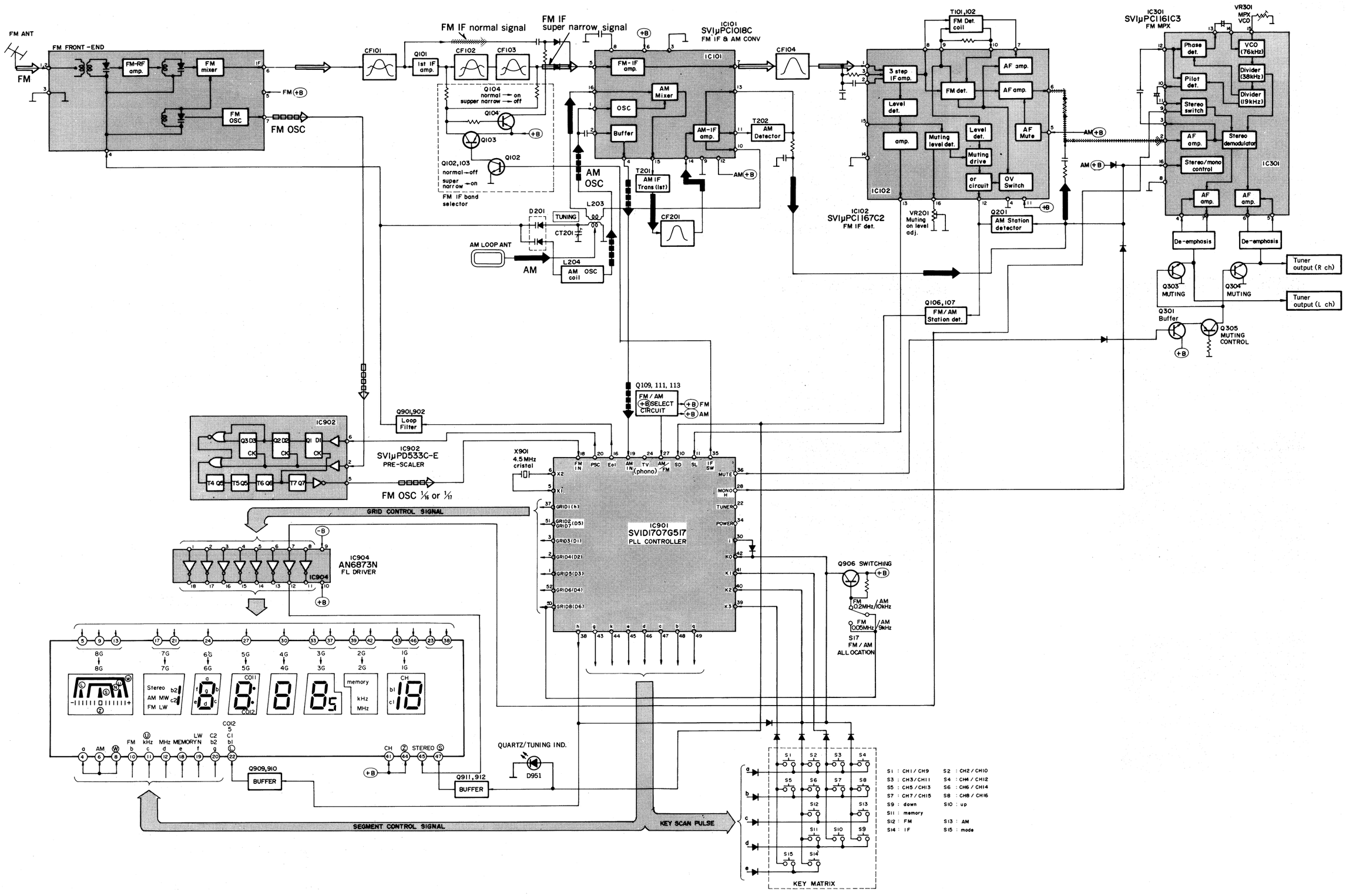
■ STEREOPLEX/SPACE DIMENSION DISPLAY TUBE AND TIMECHART







■ BLOCK DIAGRAM



L channel
RIAA
PHONO
IC 401
AN6558F
EQUALIZER AMP.
From Tuner
S2-1 (PHONO)
S2-2 (TUNER)
S2-3 (CD/AUX 1)
S2-4 (VIDEO/AUX 2)
S2-5 (TV/AUX 3)
CD/AUX 1
VIDEO/AUX 2
TV/AUX 3
+B
(PHONO)
(TUNER)
(CD/AUX 1)
(VIDEO/AUX 2)
(TV/AUX 3)
S25 (TAPE MONITOR)
REC OUT TAPE 1 PLAYBACK
REC OUT TAPE 2 PLAYBACK
(TAPE 1)
(TAPE 2)
S23 (DUBBING SELECTOR)
S30-5
IC804 SVINJ4559 BUFFER
IC802 AN6554F OPERATION AMP
IC803 SVINJ4559 MIXING AMP
IC 804 (2/2)
IC 802 (1/4)
IC 802 (2/4)
IC 803 (2/2)
IC 804 (1/2)
IC 802 (4/4)
IC 802 (3/4)
IC 803 (1/2)
From Rch
Position detecting circuit
IC501(1/4)
IC501(2/4)
IC501(3/4)
IC501(4/4)
IC501 AN6554F OPERATION AMP
space dimension
stereoplex
S31-6
S31-5
S31-1~S31-6 (SOUND EFFECT) space dimension/ stereoplex selector
To Rch
S31-3
S31-2
S31-1
S31-4
S30-3
S30-2
S30-1
S30-6
IC504 SVIBA6148 SPACE DIMENSION CONTROL (Rch)
IC505 SVIBA6148 STEREOPLEX DRIVE
IC503 SVIBA6148 SPACE DIMENSION CONTROL (L ch)
S30-1~S30-6 (SOUND EFFECT) on/off selector
SPACE DIMENSION & STEREOPLEX DISPLAY
T701 Power transformer
Rectifier D701~704
S702 Tap selector
Q702,703,707 Regulator
Q701 Regulator
Rectifier D706~709
Q704~706 Regulator
D713 Rectifier
AC INLET 110V/120V/220V/240V 50/60Hz
Power ind.
NFB
LFB
S27 (LOUDNESS)
IC502 SVINJ4559DSM FLAT AMP.
VR501-1 (VOLUME)
VR504 (BALANCE)
NF
VR503 (TREBLE)
VR502 (BASS)
S28 (HIGH FILTER)
S29 (SUBSONIC FILTER)
CURRENT MIRROR
CASCADE
EMITTOR FOLLOWER
CONSTANT-CURRENT
BIAS
MUTE
IC 71 AN7062 VOLTAGE AMP.
Q71 Voltage AMP.
Q605,607 Pre-drive
CLASS A Drive Q609,611
Power amp. Q613,615
Q601 Ica bias control
VR601 (Ica adj.)
Q603 Ica bias control
Q810,811 Relay drive
Q809 Ica control
Q806,807 Signal level control
IC 801 MN1404STE Ica CONTROLLER
Q803,804 DC Detector
Q801 Over load det.
Q805 Reset circuit
From Power supply circuit
IC781 AN6882 LED DRIVE
Q781 REGULATOR
Peak power meter (L ch)
S31 (MAIN)
MAIN
REMOTE
S32 (REMOTE)
HEADPHONES JACK
AC Volts
( ) indicates pin No. of right channel.

■ RESISTORS AND CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω , (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF. (microfarad). P = 10^{-6} μF.
6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all area.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage			Tolerance		
ERD	: Carbon	10	:	1/8W	G	:	± 2%
ERO	: Metal Film	12	:	1/2W	J	:	± 5%
ERG	: Metal Oxide	S2	:	1/4W	K	:	± 10%
ERC	: Solid	25	:	1/4W			
		S1	:	1/2W			
		1	:	1W			
		2	:	2W			

ERD10TLJ□□□ ⟶ Chip type carbon

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Capacitor Type		Voltage				Tolerance		
		ECEA Type			Other			
ECEA	: Electrolytic	OJ	:	6.3V	1H	: 50V	C	: ± 0.25pF
ECCD	: Ceramic	1A	:	10V	2H	: 500V	J	: ± 5%
ECKD	: Ceramic	1C	:	16V	KC	: 400V AC	K	: ± 10%
ECQM	: Polyester	1E	:	25V			Z	: +80%, −20%
ECQP	: Polypropylene	1H	:	50V			M	: ± 20%
ECES	: Electrolytic	1V	:	35V			P	: +100%, −0%
		50	:	50V				
		25	:	25V				
		1J	:	63V				
		2A	:	100V				

• RESISTORS

Ref. No.	Part No.	Value
R71, 72	ERD10TLJ334U	330K
R73, 74	ERD10TLJ102U	1K
R75, 76	ERD10TLJ124U	120K
R77, 78	ERD10TLJ103U	10K
R79, 80	ERD10TLJ220U	22
R104	ERDS2TJ184	180K
R105	ERDS2TJ102	1K
R106, 107	ERDS2TJ682	6.8K
R108	ERDS2TJ332	3.3K
R109	ERDS2TJ472	4.7K
R110	ERDS2TJ104	100K
R111	ERDS2TJ103	10K
R112 Ⓢ⚠	ERD25FJ151	150
R115	ERDS2TJ562	5.6K
R118 ⚠	ERDS1FJ823	82K
R119 Ⓢ⚠	ERD25FJ821	820
R120	ERDS2TJ331	330
R122	ERDS2TJ104	100K
R123	ERDS2TJ331	330
R124	ERDS2TJ824	820K
R125 Ⓢ⚠	ERD25FJ151	150
R126	ERDS2TJ183	18K
R127	ERDS2TJ393	39K
R129	ERDS2TJ182	1.8K
R130	ERDS2TJ683	68K
R131	ERDS2TJ682	6.8K
R134 Ⓢ⚠	ERD25FJ121	120
R135, 136	ERDS2TJ103	10K
R137	ERDS2TJ273	27K
R138	ERDS2TJ103	10K
R139	ERDS2TJ473	47K
R142	ERDS2TJ471	470
R143	ERDS2TJ223	22K
R144	ERDS2TJ272	2.7K
R145	ERDS2TJ123	12K
R146 Ⓢ⚠	ERD25FJ561	560
R152	ERDS2TJ473	47K
R156	ERDS2TJ103	10K
R158	ERDS2TJ473	47K
R159	ERDS2TJ153	15K
R174	ERDS2TJ333	33K
R185	ERDS2TJ221	220
R187	ERDS2TJ393	39K
R188	ERDS2TJ562	5.6K
R190	ERDS2TJ273	27K
R201	ERDS2TJ102	1K
R202	ERDS2TJ104	100K
R203	ERDS2TJ821	820
R205	ERDS2TJ273	27K
R207	ERDS2TJ273	27K
R208	ERDS2TJ123	12K
R210 ⚠	ERDS1FJ102	1K
R211	ERDS2TJ562	5.6K
R212	ERDS2TJ471	470
R213	ERDS2TJ104	100K
R214	ERDS2TJ273	27K
R215	ERDS2TJ823	82K
R301 Ⓢ⚠	ERD25FJ151	150
R302	ERDS2TJ102	1K
R305, 306	ERDS2TJ223	22K
R307, 308	ERDS2TJ473	47K
R309	ERDS2TJ153	15K
R310	ERDS2TJ221	220
R313, 314	ERDS2TJ104	100K
R315, 316	ERDS2TJ392	3.9K
R319	ERDS2TJ103	10K
R320	ERDS2TJ104	100K
R321	ERDS2TJ102	1K
R325	ERDS2TJ332	3.3K
R326	ERDS2TJ474	470K
R401, 402	ERDS2TJ391	390
R403, 404	ERDS2TJ224	220K
R405, 406	ERDS2TJ563	56K
R407, 408	ERDS2TJ271	270
R409, 410	ERDS2TJ680	68
R411, 412	ERDS2TJ184	180K
R413, 414	ERDS2TJ123	12K
R415, 416	ERDS2TJ563	56K
R417, 418	ERDS2TJ102	1K
R421, 422	ERDS2TJ824	820K
R501, 502	ERDS2TJ222	2.2K
R503	ERDS2TJ103	10K
R504, 505	ERDS2TJ103	10K
R506	ERDS2TJ103	10K
R507, 508	ERDS2TJ153	15K
R509, 510	ERDS2TJ393	39K
R511, 512	ERDS2TJ393	39K
R513, 514	ERDS2TJ104	100K
R515, 516	ERDS2TJ333	33K
R517	ERDS2TJ153	15K
R518	ERDS2TJ103	10K
R519, 520	ERDS2TJ682	6.8K
R521	ERDS2TJ103	10K
R522	ERDS2TJ123	12K
R523, 524	ERDS2TJ474	470K
R525, 526	ERDS2TJ474	470K
R527, 528	ERDS2TJ474	470K
R529, 530	ERDS2TJ392	3.9K
R531, 532	ERDS2TJ223	22K
R533, 534	ERDS2TJ102	1K
R535, 536	ERDS2TJ393	39K
R537, 538	ERDS2TJ332	3.3K
R539, 540	ERDS2TJ824	820K
R541, 542	ERDS2TJ272	2.7K
R543, 544	ERDS2TJ824	820K
R545, 546	ERDS2TJ103	10K
R547	ERDS2TJ103	10K
R549	ERDS2TJ102	1K
R550	ERDS2TJ223	22K
R551, 552	ERDS2TJ153	15K
R557	ERDS2TJ333	33K
R559	ERDS2TJ273	27K
R560	ERDS2TJ101	100
R561, 562	ERDS2TJ824	820K
R563, 564	ERDS2TJ824	820K
R567, 568	ERDS2TJ222	2.2K
R571, 572	ERDS2TJ222	2.2K
R573, 574	ERDS2TJ104	100K
R601, 602	ERDS2TJ681	680
R605, 606	ERDS2TJ104	100K
R607, 608	ERDS2TJ272	2.7K
R611, 612 Ⓢ	ERD25FJ681	680
R613, 614 Ⓢ	ERD25FJ681	680
R615, 616 Ⓢ	ERD25FJ681	680
R617, 618 Ⓢ	ERD25FJ182	1.8K
R619, 620	ERDS2TJ223	22K
R621, 622 Ⓢ⚠	ERD25FJ100	10
R623, 624 Ⓢ⚠	ERD25FJ331	330
R625, 626	ERDS2TJ184	180K
R627, 628	ERDS2TJ184	180K
R629, 630	ERDS2TJ124	120K
R631, 632	ERDS2TJ332	3.3K
R633, 634 ⚠	ERD25FJ470	47
R635, 636	ERDS2TJ221	220
R637, 638	ERDS2TJ331	330
R639, 640 Ⓢ	ERG1ANJ100	10
R641, 642 Ⓢ	ERG1ANJ100	10
R643, 644	ERDS2TJ103	10K
R647 Ⓢ	ERD25FJ470	47
R648	ERDS2TJ683	68K
R649, 650	ERDS2TJ223	22K
R651	ERDS2TJ123	12K
R652 Ⓢ	ERG1ANJ561	560
R653, 654 Ⓢ	ERG1ANJ331	330
R656 Ⓢ⚠	ERD25FJ470	47
R657, 658	ERDS2TJ104	100K
R701 ⚠	ERC12ZGK335	3.3M
R703 Ⓢ⚠	ERG2ANJ181	180
R706	ERDS2TJ562	5.6K
R707	ERDS2TJ153	15K
R708	ERDS2TJ122	1.2K
R709	ERDS2TJ153	15K
R710	ERDS2TJ562	5.6K
R711 ⚠	ERDS1FJ471	470
R712 Ⓢ⚠	ERD25FJ330	33
R713 ⚠	ERDS1FJ100	10
R715 Ⓢ	ERG1ANJ331	330
R716	ERDS2TJ152	1.5K
R717	ERDS2TJ821	820
R718	ERDS2TJ392	3.9K
R719	ERDS2TJ332	3.3K
R720	ERDS2TJ222	2.2K
R727 Ⓢ	ERG1ANJ121	120
R728 Ⓢ	ERG2ANJ680	68
R729	ERDS2TJ182	1.8K
R750	ERDS2TJ101	100
R781, 782 Ⓢ	ERD25FJ392	3.9K
R783, 784 Ⓢ	ERD25TJ104	100K

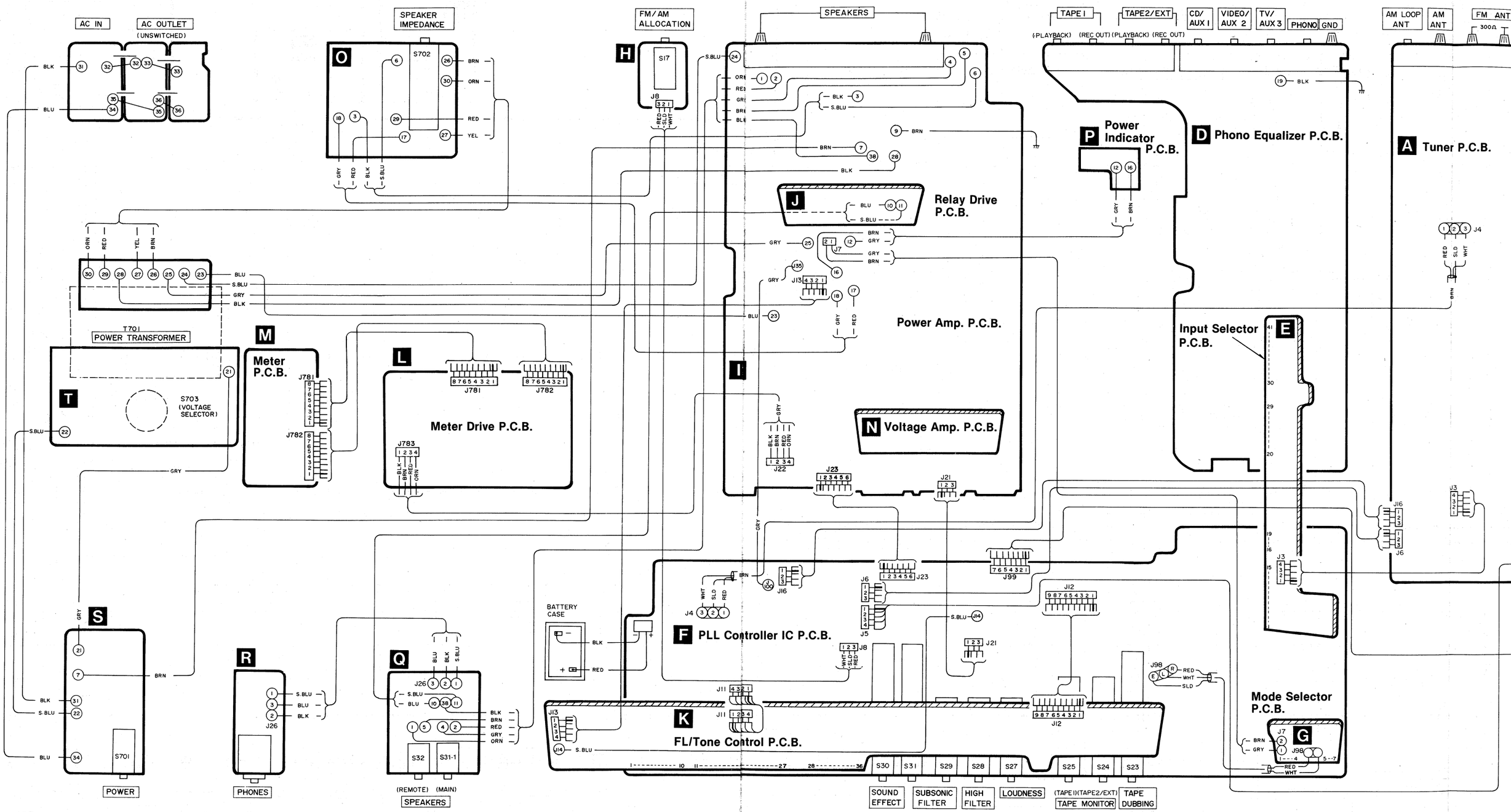
• RESISTORS

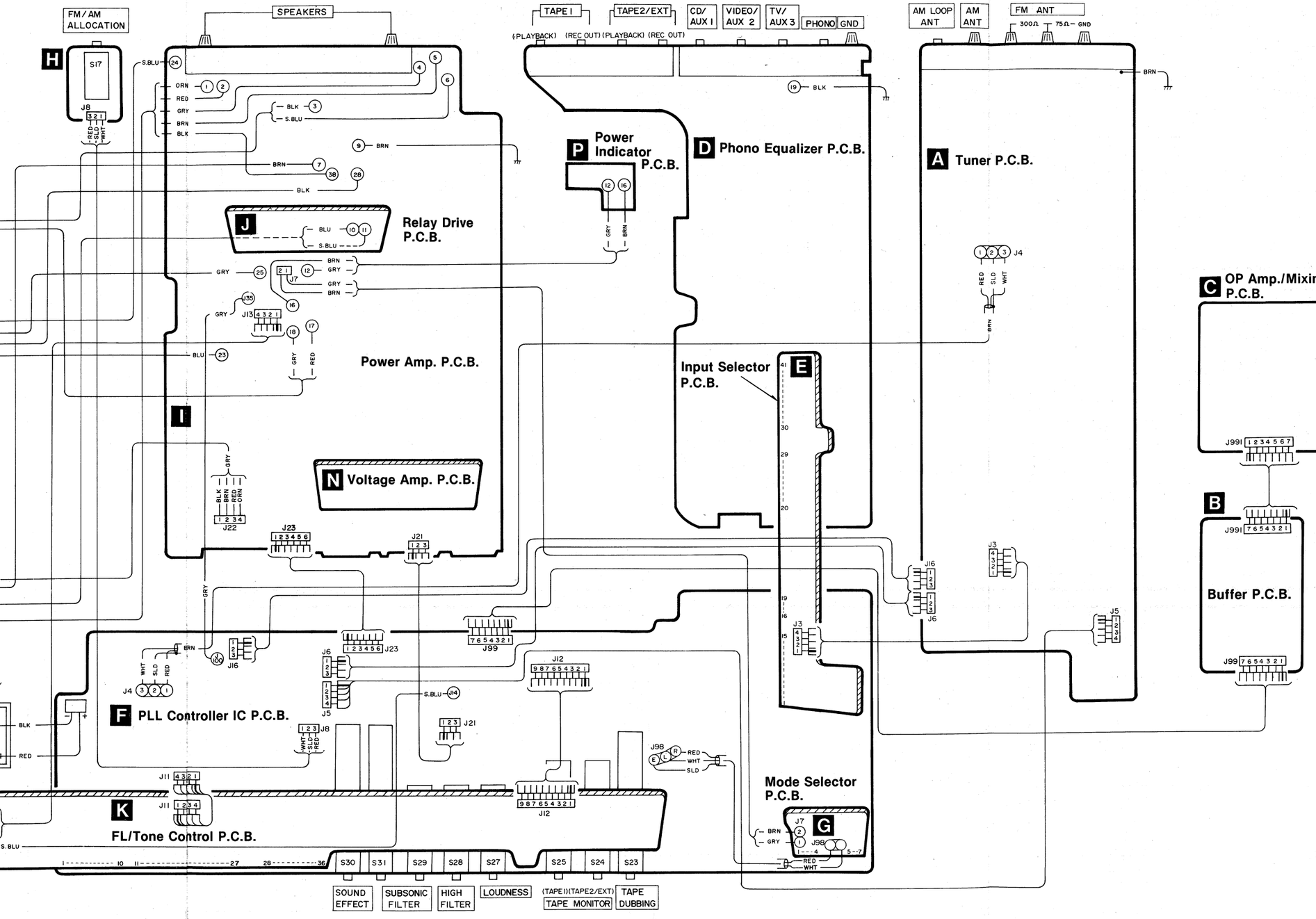
Ref. No.	Part No.	Value
R785, 786 Ⓢ	ERD25FJ391	390
R787, 788 Ⓢ	ERD25TJ224	220K
R789, 790 Ⓢ	ERD25TJ153	15K
R791, 792 Ⓢ	ERD25FJ102	1K
R793, 794 Ⓢ	ERD25TJ273	27K
R795, 796 ⚠	ERDS1FJ101	100
R797 Ⓢ	ERG2ANJ101	100
R798 Ⓢ	ERD25FJ222	2.2K
R801, 802	ERDS2TJ823	82K
R803, 804	ERDS2TJ683	68K
R805, 806	ERDS2TJ331	330
R807, 808	ERDS2TJ272	2.7K
R809	ERDS2TJ333	33K
R810	ERDS2TJ153	15K
R812	ERDS2TJ333	33K
R813	ERDS2TJ183	18K
R814	ERDS2TJ333	33K
R815	ERDS2TJ273	27K
R816, 817	ERDS2TJ103	10K
R818	ERDS2TJ103	10K
R819	ERDS2TJ102	1K
R820, 821	ERDS2TJ822	8.2K
R822	ERDS2TJ394	390K
R824	ERDS2TJ153	15K
R825	ERDS2TJ183	18K
R826, 827	ERDS2TJ223	22K
R828	ERDS2TJ223	22K
R829	ERDS2TJ682	6.8K
R830	ERDS2TJ822	8.2K
R831	ERDS2TJ223	22K
R851, 852	ERDS2TJ822	8.2K
R853, 854	ERDS2TJ562	5.6K
R855, 856	ERDS2TJ472	4.7K
R857, 858	ERDS2TJ183	18K
R859, 860	ERDS2TJ272	2.7K
R861, 862	ERDS2TJ272	2.7K
R863, 864	ERDS2TJ682	6.8K
R865, 866	ERDS2TJ472	4.7K
R867, 868	ERDS2TJ273	27K
R869, 870	ERDS2TJ273	27K
R871, 872	ERDS2TJ273	27K
R873, 874	ERDS2TJ183	18K
R875, 876	ERDS2TJ223	22K
R877	ERDS2TJ223	22K
R878	ERDS2TJ223	22K
R879, 880	ERDS2TJ332	3.3K
R881, 882	ERDS2TJ682	6.8K
R883, 884	ERDS2TJ102	1K
R885, 886	ERDS2TJ473	47K
R887, 888	ERDS2TJ103	10K
R891, 892 Ⓢ	ERD25TJ224	220K
R893, 894 Ⓢ	ERD25FJ102	1K
R895, 896 Ⓢ	ERD25TJ124	120K
R897, 898 Ⓢ	ERD25TJ224	220K
R899, 900 Ⓢ	ERD25TJ224	220K
R901	ERDS2TJ102	1K
R902	ERDS2TJ561	560
R903	ERDS2TJ103	10K
R904	ERDS2TJ824	820K
R905	ERDS2TJ223	22K
R906	ERDS2TJ103	10K
R909	ERDS2TJ103	10K
R917	ERDS2TJ104	100K
R918	ERDS2TJ224	220K
R924	ERDS2TJ224	220K
R925	ERDS2TJ104	100K
R926, 927	ERDS2TJ104	100K
R928	ERDS2TJ103	10K
R929	ERDS2TJ102	1K
R930 Ⓢ⚠	ERD25FJ121	120
R931, 932 ⚠	ERDS1FJ821	820
R933, 934	ERDS2TJ101	100
R936	ERDS2TJ221	220
R941, 942	ERDS2TJ332	3.3K
R943, 944	ERDS2TJ104	100K
R945, 946	ERDS2TJ333	33K
R947	ERDS2TJ100	10
R950	ERDS2TJ333	33K
R958	ERDS2TJ103	10K
R959	ERDS2TJ151	150

• CAPACITORS

Ref. No.	Part No.	Value
C71, 72 Ⓢ	ECEA50Z3R3	3.3
C73, 74 Ⓢ	ECCD1H390K	39P
C75, 76 Ⓢ	ECCD1H820K	82P
C77, 78 Ⓢ	ECKD1H391KB	390P
C102	ECEA1HU010	1
C104 Ⓢ	ECKD1H223ZF	0.022
C107 Ⓢ	ECKD1H103ZF	0.01
C110, 111 Ⓢ	ECKD1H103ZF	0.01
C113 Ⓢ	ECKD1H103ZF	0.01
C114	ECEA1HU010	1
C115, 116 Ⓢ	ECKD1H103ZF	0.01
C117, 118 Ⓢ	ECKD1H103ZF	0.01
C119, 120 Ⓢ	ECKD1H103ZF	0.01
C121, 122 Ⓢ	ECKD1H103ZF	0.01
C123	ECEA1HU010	1
C124 Ⓢ	ECCD1H101K	100P
C125	ECEA1HU010	1
C126 Ⓢ	ECKD1H103ZF	0.01
C127	ECEA1CU100	10
C128, 129 Ⓢ	ECKD1H103ZF	0.01
C130, 131 Ⓢ	ECKD1H103ZF	0.01
C132	ECEA1HUR47	0.47
C133 Ⓢ	ECQM1H103JZ	0.01
C145 Ⓢ	ECKD1H223ZF	0.022
C201, 202 Ⓢ	ECKD1H223ZF	0.022
C203 Ⓢ	ECCD1H120KC	12P
C204 Ⓢ	ECKD1H223ZF	0.022
C207	ECEA0JU470	47
C208	ECEA1CU100	10
C210	ECEA1CU100	10
C211, 212 Ⓢ	ECKD1H103ZF	0.01
C214	ECEA1HU010	1
C215	ECQP1471JZ	470P
C216 Ⓢ	ECCD1H080CC	8P
C217 Ⓢ	ECCD1H470K	47P
C301	ECEA1CU471	470
C302	ECEA1EU4R7	4.7
C303 Ⓢ	ECQM1H473JZ	0.047
C305, 306 Ⓢ	ECCD1H181K	180P
C307, 308	ECEA1EU3R3	3.3
C309, 310 Ⓢ	ECQM1H223JZ	0.022
C311, 312	ECEA1EU3R3	3.3
C315	ECEA1HU4R7	4.7
C317 Ⓢ	ECKD1H223ZF	0.022
C318	ECEA1HUR47	0.47
C319	ECQP1471JZ	470P
C320 Ⓢ	ECKD1H103ZF	0.01
C323	ECEA1HU010	1
C324	ECEA1HU3R3	3.3
C401, 402	ECEA1EU3R3	3.3
C403, 404	ECEA0JU330	33
C405, 406 Ⓢ	ECCD1H101K	100P
C407, 408 Ⓢ	ECKD1H471KB	470P
C409, 410 Ⓢ	ECQM1H223JZ	0.022
C411, 412 Ⓢ	ECQM1H682JZ	0.0068
C413, 414	ECEA1HU010	1
C415 Ⓢ	ECKD1H103ZF	0.01
C501, 502	ECEA1HU100	10
C503 Ⓢ	ECQM1H473JZ	0.047
C504 Ⓢ	ECKD1H102ZF	0.001
C505, 506	ECEA1HU010	1
C507, 508 Ⓢ	ECQM1H563JZ	0.056
C509, 510 Ⓢ	ECKD1H331KB	330P
C511, 512	ECEA1HU3R3	3.3
C513, 514 Ⓢ	ECCD1H680K	68P
C515, 516 Ⓢ	ECCD1H101K	100P
C517, 518 Ⓢ	ECCD1H390K	39P
C519, 520 Ⓢ	ECQM1H332JZ	0.0033
C521, 522	ECEA1HU010	1
C523, 524 Ⓢ	ECQM1H183JZ	0.018
C525, 526 Ⓢ	ECQM1H333JZ	0.033
C527, 528 Ⓢ	ECQM1H104JZ	0.1
C529, 530 Ⓢ	ECQM1H563JZ	0.056
C531, 532 Ⓢ	ECQM1H822JZ	0.0082
C533, 534	ECEA1HKS100	10
C535	ECEA1HKS100	10
C536	ECEA1HU3R3	3.3
C539, 540 Ⓢ	ECKD1H103ZF	0.01
C541, 542 Ⓢ	ECKD1H103ZF	0.01
C547, 548 Ⓢ	ECEA50Z3R3	3.3
C549	ECEA1EU330	33
C550	ECEA1VU221	220
C551, 552	ECEA1EU3R3	3.3
C553, 554 Ⓢ	ECKD1H391KB	390P
C555, 556 Ⓢ	ECQM1H332JZ	0.0033
C559	ECEA1VU100	10
C590 Ⓢ	ECKD1H152KB	0.0015
C601, 602 Ⓢ	ECKD1H821KB	820P
C603, 604 Ⓢ	ECKD1H102KB	0.001
C605, 606 Ⓢ	ECCD1H100KC	10P
C609, 610 Ⓢ⚠	ECCD1H560K	56P
C611, 612 Ⓢ⚠	ECCD1H560K	56P
C613, 614	ECEA1HU010	1
C615, 616 Ⓢ	ECKD1H681KB	680P
C617, 618 Ⓢ	ECKD1H681KB	680P
C620	ECEA2AU100	10
C621, 622 Ⓢ	ECCD1H060CC	6P
C623, 624	ECEA1CU330	33
C625, 626 Ⓢ	ECQM1H473JZ	0.047
C627, 628	ECEA2AU220	22
C630 Ⓢ	ECQM1H563JZ	0.056
C631, 632 Ⓢ	ECCD1H050CC	5P
C701	ECKDKC103PF	0.01
C702, 703	ECET71V123Z	12000
C704, 705	ECEA1HU331	330
C706, 707	ECEA1HU331	330
C708	ECEA1EU330	33
C709	ECEA1EU100	10
C710, 711 Ⓢ	ECKD1H103ZF	0.01
C713	ECEA1EU101	100
C714, 715 Ⓢ⚠	ECKD2H103ZF	0.01
C716	ECKD1H103ZF	0.01
C717, 718	ECEA1VU471	470
C719	ECEA1EU221	220
C720 Ⓢ	ECKD1H223ZF	0.022
C721	ECEA1CU100	10
C725	ECEA1AU470	47
C726	ECEA1VU101	100
C727	ECEA1VU221	220
C728	ECEA1VU100	10
C781, 782	ECEA1HU2R2	2.2
C783, 784	ECEA50ZR1	0.1
C785, 786	ECEA1EU100	10
C787 Ⓢ	ECKD1H103ZF	0.01
C801	ECEA1AU101	100
C802	ECEA1HU010	1
C803	ECEA1EU3R3	3.3
C805	ECEA1EU3R3	3.3
C806	ECEA0JU471	470
C807 Ⓢ	ECCD1H121K	120P
C808	ECEA1HU010	1
C849, 850 Ⓢ	ECQM1H223JZ	0.022
C851, 852 Ⓢ	ECQM1H104JZ	0.1
C853, 854 Ⓢ	ECQM1H472JZ	0.0047
C857, 858	ECEA1CU100	10
C859, 860 Ⓢ	ECQM1H102JZ	0.001
C891, 892	ECEA1EU3R3	3.3
C893, 894 Ⓢ	ECCD1H820K	82P
C895, 896 Ⓢ	ECCD1H220K	22P
C897, 898 Ⓢ	ECKD1H103ZF	0.01
C899, 900 Ⓢ	ECCD1H820K	82P
C901 Ⓢ	ECCD1H100KC	10P
C902 Ⓢ	ECCD1H390KC	39P
C903, 904 Ⓢ	ECKD1H103ZF	0.01
C905 Ⓢ	ECCD1H101K	100P
C906 Ⓢ	ECKD1H103ZF	0.01
C907	ECEA25M4R7R	4.7
C908 Ⓢ	ECKD1H103ZF	0.01
C909	ECEA0JU222	2200
C910 Ⓢ	ECKD1H103ZF	0.01
C914	ECEA0JU471	470
C920	ECEA0JU101	100
C921	ECKD1H102MD	0.001
C930	ECEA1EU470	47

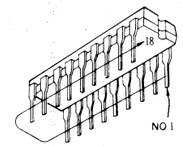
■ WIRING CONNECTION DIAGRAM



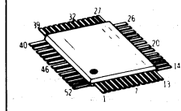


■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

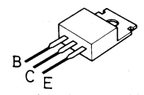
AN6558F	8 pin
SVINJ4559DSM	
SVIUPB553C-E	
AN6554F	14 pin
MN1404STE	16 pin
SVIUPC1018C	
SVIBA6148	
SVIUPC1167C2	
SVIUPC1161C3	
AN6882	18 pin
AN6873N	
AN7062	



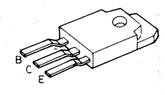
SVID1707G511



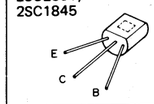
2SA1112, 2SD762
2SC2592



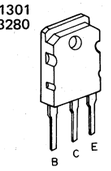
2SC3182



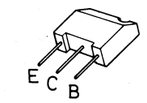
2SA1123, 2SC1815
2SA1015, 2SC1383
2SC1675, 2SA992
2SA684,
2SC2631,
2SC1845



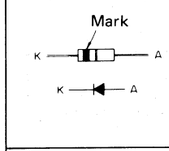
2SA1301
2SC3280



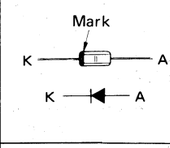
2SB641, 2SD636



MA162A, MA150



MA165, MA27W-A



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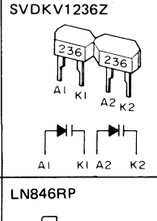
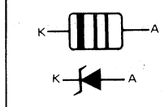
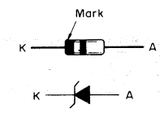


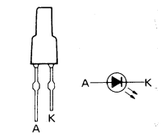
MA4062M, MA4075
MA4110M, MA4330L
MA4160L



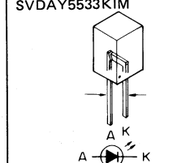
MA1160L



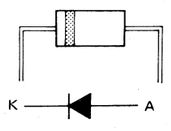
LN846RP



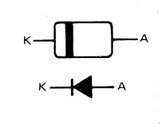
SVDAY5533KIM



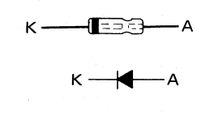
SVDS3V20



MA167



20A90FV



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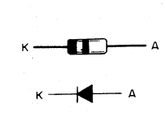
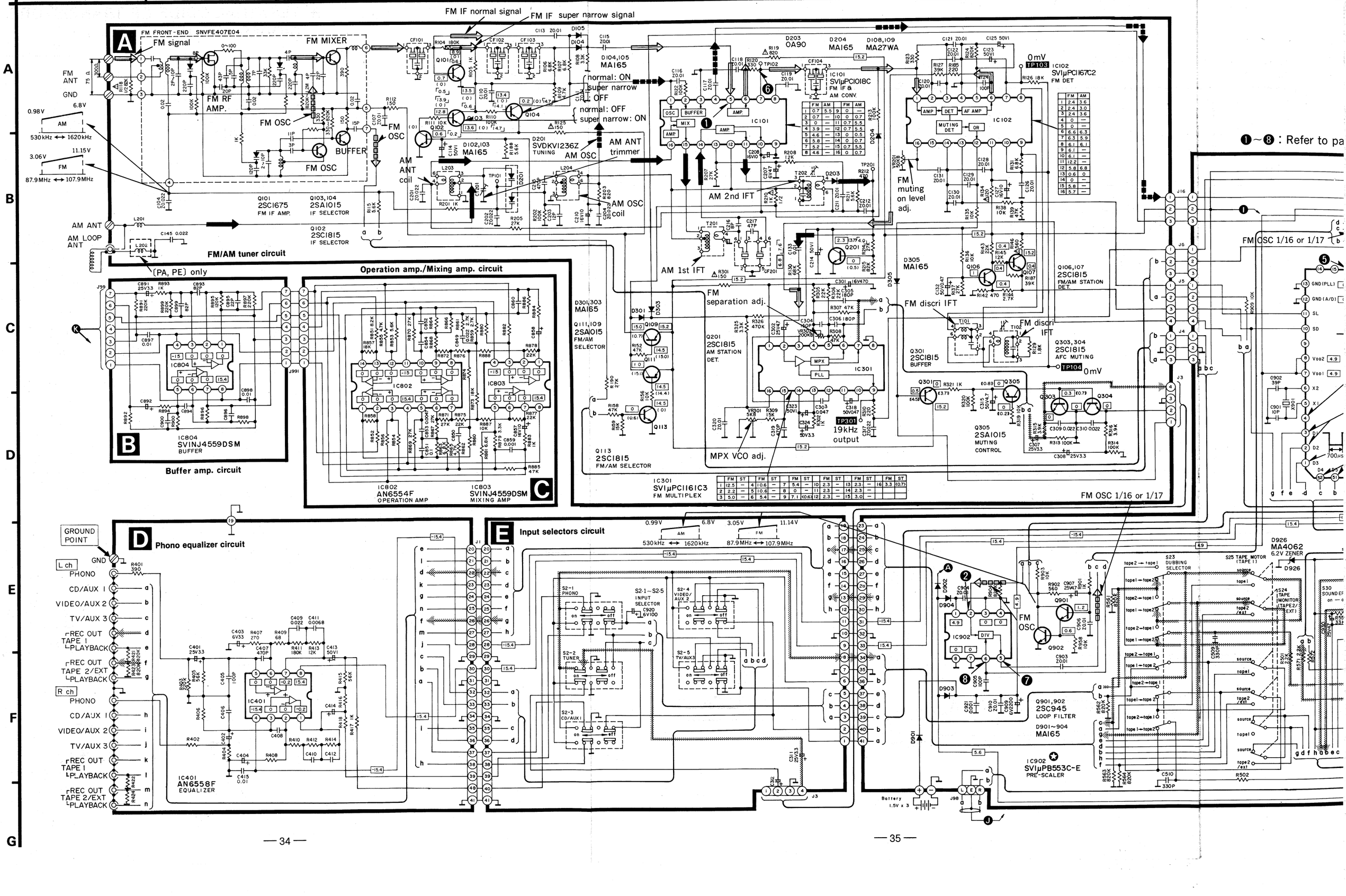
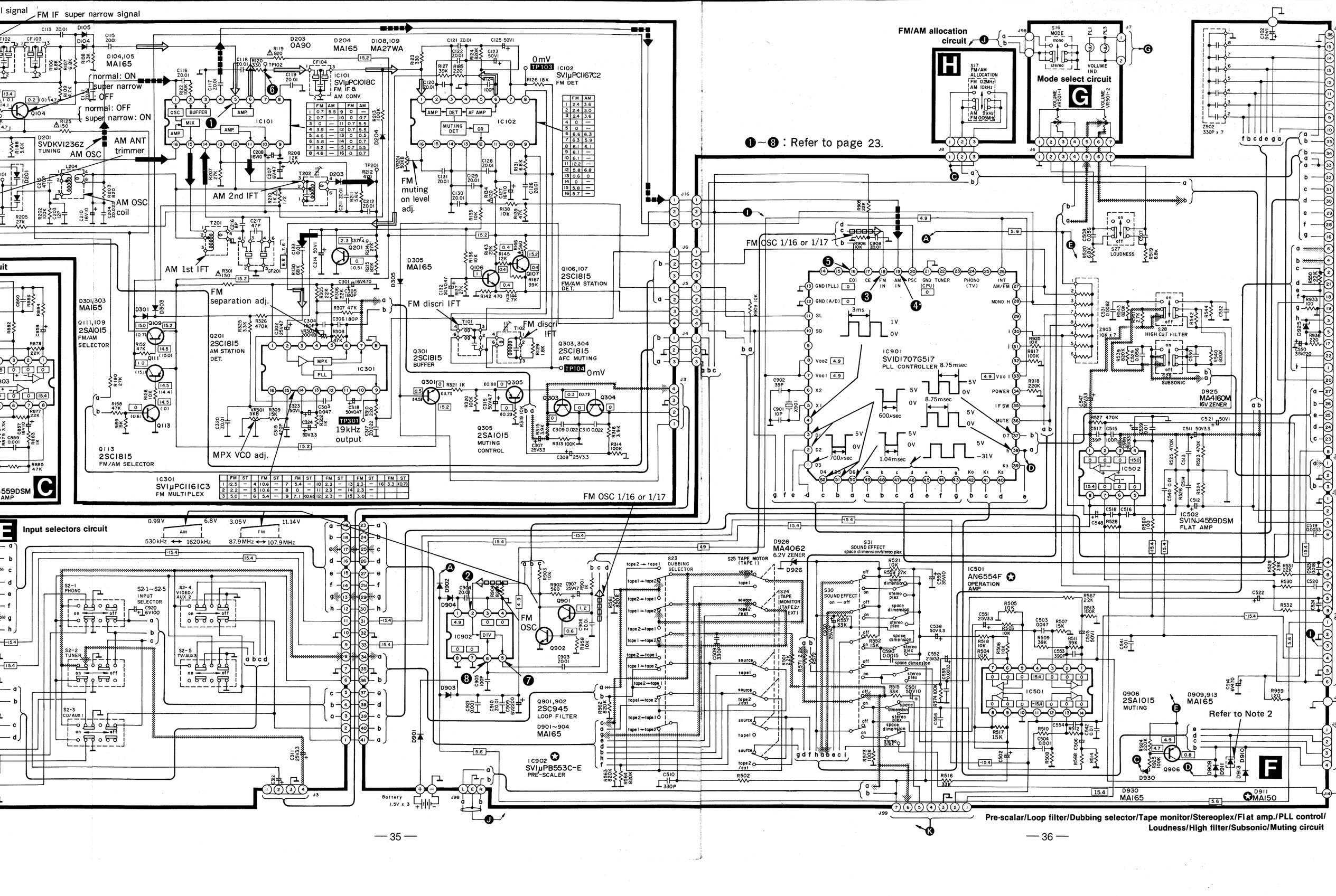



FM FRONT-END SNVFE407E04
FM signal
FM MIXER
FM RF AMP.
FM OSC
BUFFER
FM IF normal signal
FM IF super narrow signal
normal: ON
super narrow: OFF
normal: OFF
super narrow: ON
AM ANT trimmer
AM OSC
AM ANT coil
AM OSC coil
AM 2nd IFT
AM 1st IFT
FM separation adj.
FM discri IFT
FM muting on level adj.
MPX VCO adj.
19kHz output
FM OSC 1/16 or 1/17
0.98V
6.8V
530kHz ↔ 1620kHz
3.06V
11.15V
87.9MHz ↔ 107.9MHz
AM ANT
AM LOOP ANT
FM ANT 75Ω
GND
(PA, PE) only
FM/AM tuner circuit
Q101 2SC1675 FM IF AMP.
Q103,104 2SA1015 IF SELECTOR
Q102 2SC1815 IF SELECTOR
D101,105 MA165
D102,103 MA165
D201 SVDKV1236Z TUNING
D203 0A90
D204 MA165
D108,109 MA27WA
IC101 SVIμPC1018C FM IF & AM CONV.
IC102 SVIμPC1167C2 FM DET
D305 MA165
Q106,107 2SC1815 FM/AM STATION DET.
Q303,304 2SC1815 AFC MUTING
Q301 2SC1815 BUFFER
Q305 2SA1015 MUTING CONTROL
D301,303 MA165
Q111,109 2SA1015 FM/AM SELECTOR
Q201 2SC1815 AM STATION DET.
Q113 2SC1815 FM/AM SELECTOR
IC301 SVIμPC1161C3 FM MULTIPLEX
TP101
TP102
TP103 0mV
TP104 0mV
TP201
TP301
Operation amp./Mixing amp. circuit
IC804 SVINJ4559DSM BUFFER
Buffer amp. circuit
IC802 AN6554F OPERATION AMP
IC803 SVINJ4559DSM MIXING AMP
❶~❽ : Refer to pa
FM OSC 1/16 or 1/17
GROUND POINT
L ch
R ch
PHONO
CD/AUX 1
VIDEO/AUX 2
TV/AUX 3
REC OUT TAPE 1 PLAYBACK
REC OUT TAPE 2/EXT PLAYBACK
Phono equalizer circuit
IC401 AN6558F EQUALIZER
Input selectors circuit
S2-1 PHONO
S2-2 TUNER
S2-3 CD/AUX 1
S2-4 VIDEO/AUX 2
S2-5 TV/AUX 3
S2-1~S2-5 INPUT SELECTOR
FM OSC
Q901,902 2SC945 LOOP FILTER
D901~904 MAI65
IC902 SVIμPB553C-E PRE-SCALER
D926 MA4062 6.2V ZENER
S23 DUBBING SELECTOR
S25 TAPE MOTOR (TAPE 1)
S24 TAPE (MONITOR (TAPE2/EXT)
S30 SOUND EF
Battery 1.5V x 3


FM IF super narrow signal
normal: ON
super narrow: OFF
normal: OFF
super narrow: ON
AM ANT trimmer
AM OSC
AM OSC coil
AM 2nd IFT
AM 1st IFT
FM separation adj.
FM discri IFT
FM discri IFT
FM muting on level adj.
MPX VCO adj.
FM OSC 1/16 or 1/17
FM/AM allocation circuit
Mode select circuit
FM OSC 1/16 or 1/17
Input selectors circuit
Refer to Note 2
Battery 1.5V x 3
IC101 SVIμPC1018C FM IF & AM CONV.
IC102 SVIμPC1167C2 FM DET
IC301 SVIμPC1161C3 FM MULTIPLEX
IC901 SVIDI707G517 PLL CONTROLLER
IC902 SVIμPB553C-E PRE-SCALER
IC501 AN6554F OPERATION AMP
IC502 SVINJ4559DSM FLAT AMP
Q101,109 2SAI015 FM/AM SELECTOR
Q104
Q106,107 2SCI815 FM/AM STATION DET.
Q113 2SCI815 FM/AM SELECTOR
Q201 2SCI815 AM STATION DET.
Q301 2SCI815 BUFFER
Q303,304 2SCI815 AFC MUTING
Q305 2SAI015 MUTING CONTROL
Q901,902 2SC945 LOOP FILTER
Q906 2SAI015 MUTING
D201 SVDKVI236Z TUNING
D301,303 MAI65
D305 MAI65
D901~904 MAI65
D926 MA4062 6.2V ZENER
D930 MAI65
D925 MA4160M 16V ZENER
S16 MODE
S17 FM/AM ALLOCATION
S20 VOLUME IND
S24 TAPE MONITOR (TAPE2/EXT)
S25 TAPE MOTOR (TAPE1)
S26 SUBSONIC
S27 LOUDNESS
S28 HIGH CUT FILTER
S30 SOUND EFFECT on — off
S31 SOUND EFFECT space dimension/stereo plex
S23 DUBBING SELECTOR
S2-1 PHONO
S2-2 TUNER
S2-3 CD/AUX1
S2-4 VIDEO/AUX 2
S2-5 TV/AUX3
S2-1~S2-5 INPUT SELECTOR
TP301 19kHz output
TP103 0mV
TP104 0mV
0.99V 6.8V 3.05V 11.14V
AM 530kHz ↔ 1620kHz
FM 87.9MHz ↔ 107.9MHz
❶~❽ : Refer to page 23.
Pre-scalar/Loop filter/Dubbing selector/Tape monitor/Stereoplex/FI at amp./PLL control/
Loudness/High filter/Subsonic/Muting circuit

15 16 17 18 19 20 21 22 23 24 25

Tone control/FL drive/Stereoplex/Space dimension/Selector switch/Input selector ind. circuit K

DIGITAL FREQUENCY DISPLAY (FL)

SAD8MT17ZB3

D923 MA4062M 6.2V ZENER

Q909,911 2SD636 BUFFER

Q910,912 2SB641 BUFFER

IC904 AN6873N FL DRIVE

IC503 SVIBA6148 SPACE DIMENSION CONTROL(Lch)

IC504 SVIBA6148 SPACE DIMENSION CONTROL(Rch)

IC505 SVIBA6148 STEREO PLEX DRIVE

D951~958 LN846RP LED

D914~922 MA165

SPACE DIMENSION & STEREOPLEX DISPLAY

Power amp./ICQ bias control/Power supply circuit

ICQ control/DC detection/Overload detection/Relay drive circuit I

IC801 MN1404STE ICQ CONTROLLER

Q809 2SA992 ICQ CONTROL

Q806,807 2SC1815 SIGNAL LEVEL CONTROL

Q810,811 2SC1845 RELAY DRIVE

Q803,804 2SC1815 DC DET. J

Q805 2SC1815 POWER ON-OFF DET.

D801~806 MA167

Q801,802 2SC1845 OVER LOARD DET.

Q701,704 2SD762 REGULATOR

Q702 2SA1015 REGULATOR

Q703 2SA684NC REGULATOR

Q706 2SC1383NC REGULATOR

Q707 2SA684NC REGULATOR

D712 MA4330L 27V ZENER

D710 MA4160M 16V ZENER

D714 MA4062M 6.2V ZENER

Voltage amp. circuit N

Q71,72 MA162A

Q71,72 2SA1123 VOLTAGE AMP.

IC71 AN7062 VOLTAGE AMP.

D615 MA4160M 16V ZENER

Speaker imp. selector/ Rectifier circuit O

D701~704 SVDS3V20 RECTIFIER

D706~709 SVDISR35200 RECTIFIER

D713 SVDISR35200 RECTIFIER

S702 SPEAKER IMPEDANCE TAP SELECTOR

Power amp. circuit

Q601,602 2SC1815 ICQ BIAS CONTROL

Q603,604 2SC2631 ICQ BIAS CONTROL

Q605,606 2SC2631 PRE DRIVE

Q607,608 2SA1123 PRE DRIVE

Q609,610 2SC2592 CLASS A DRIVE

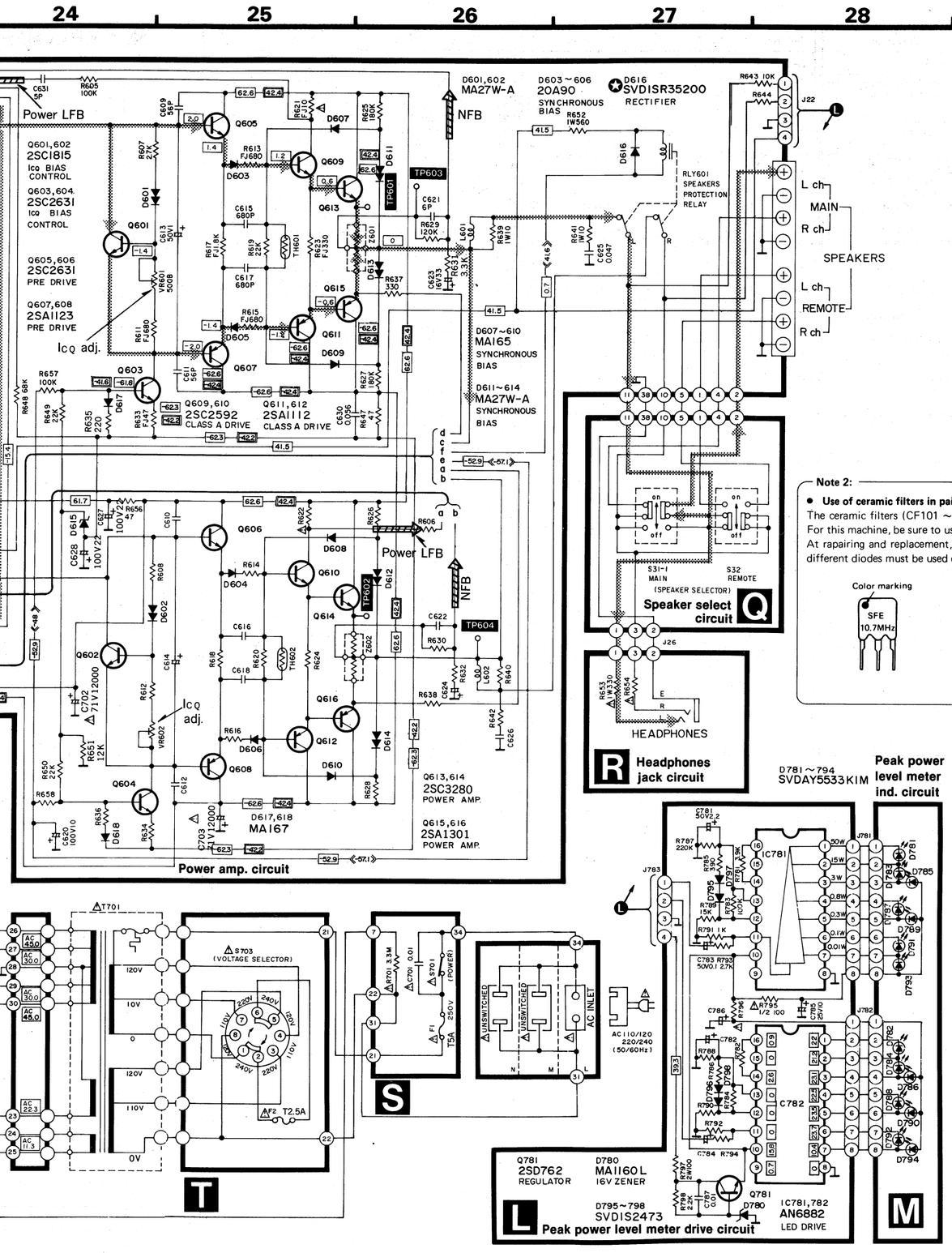
Q611,612 2SA1112 CLASS A DRIVE

ICQ adj.

D617,618 MA167

P PL2 POWER IND.

T S703 (VOLTAGE SELECTOR)



Note 2:

- **Use of ceramic filters in pairs**

The ceramic filters (CF101 ~ CF104) for FM-IF circuit are available in four ranks. For this machine, be sure to use the ceramics of the same rank in a pair. At rapairing and replacement, pay close attention to the diodes (D911) for use as different diodes must be used depending on each rank of the ceramic filters.

RANK (Color)	D911	CENTER FREQUENCY
Red	X	10.70 MHz
Black	O	10.65 MHz

Note: O Mark Diode is used.
X Mark Diode is not used.

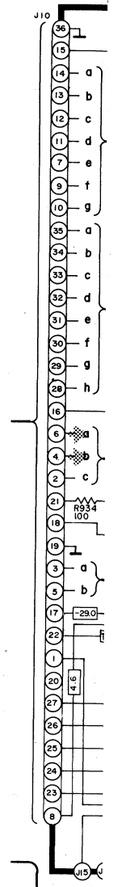
■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

Note 1:

1. **S1 ~ S8** : Preset tuning switch.
   [S1 — CH 1/CH 9 S4 — CH 4/CH 12 S7 — CH 7/CH 15
   S2 — CH 2/CH 10 S5 — CH 5/CH 13 S8 — CH 8/CH 16
   S3 — CH 3/CH 11 S6 — CH 6/CH 14]
   * With it lightly pushed and released, the 1 ~ 8 CH (front stations) are received.
   * With it continuously pushed and released, the 9 ~ 16 CH (back stations) are received.
2. **S2-1 ~ S2-5** : Input selector switch in "**tuner**" position.
   (S2-1 : phono, S2-3 : CD/aux 1 S2-5 : TV/aux 3
   S2-2 : tuner, S2-4 : video/aux 2)
3. **S9, 10** : Tuning switch.
   [S9 — down (tuning to lower frequency)
   S10 — up (tuning to higher frequency)]
4. **S11** : Memory switch.
   (manual ◄► auto)
5. **S12, 13** : Band selector switch.
   S12 — FM, S13 — AM
6. **S14** : FM IF band selector switch.
   (normal/super narrow)
7. **S15** : FM mode selector switch.
   (auto ◄► mono)
8. **S16** : Mode selector switch in "**stereo**" position.
   (▙ stereo, ▂ mono)
9. **S17** : FM/AM allocation switch in "**FM 0.05MHz/AM 9 kHz**" position.
   (FM 0.05MHz/AM 9 kHz step ◄► FM 0.2 MHz/AM 10 kHz step)
10. **S23** : Tape dubbing selector switch in "**tape 1►2**" position.
    (▙ tape 1 ►2, ▂ tape 2 ►1)
11. **S24** : Tape monitor selector switch in "**source**" position.
    (▙ source, ▂ tape 2/ext)
12. **S25** : Tape monitor selector switch in "**source**" position.
    (▙ source, ▂ tape 1)
13. **S27** : Loudness switch in "**off**" position.
    (▙ off, ▂ on)
14. **S28** : High cut filter switch in "**off**" position.
    (▙ off, ▂ on)
15. **S29** : Subsonic filter switch in "**off**" position.
    (▙ off, ▂ on)
16. **S30** : Sound effect (on/off) switch in "**off**" position.
    (▙ off, ▂ on)
17. **S31** : Sound effect (space dimension/stereoplex) switch in "**space dimension**" position.
    (▙ space dimension, ▂ stereoplex)
18. **S31–1** : Main speaker switch in "**on**" position.
    (▙ off, ▂ on)
19. **S32** : Remote speaker switch in "**off**" position.
    (▙ off, ▂ on)
20. **S701** : Power switch in "**on**" position.
21. **S702** : Speaker impedance selector switch in "**8 ~ 16Ω/16Ω**" position.
    (▙ 8 ~ 16Ω//16Ω, ▂ 4 ~ 6Ω/8Ω)
22. **S703** : Voltage selector switch in "**240V**" position.
    (110V◄►120V◄►240V◄►220V)
23. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in [ ] stand for DC voltage in FM signal (monaural signal) reception mode.
    * Figures in < > stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( ) stand for DC voltage in AM signal reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in TV signal reception mode.
    * Figures in (( )) stand for DC voltage in muting.
    * Figures in [ ] stand for DC voltage in 4 ~ 6Ω/8Ω. (Low tap)
    * Figures in ≪ ≫ stand for DC voltage in overload detection circuit is on.
24. ——— Positive and negative voltage lines
    ⇨ FM signal ⇨ AM signal ⇨ FM OSC ⇨ AM OSC ⇨ AF signal (L ch)
25. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.



■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. Bracketed indications in Ref. No. columns specify the area.
5. The parenthesized number in the column of description stand for the quantity per set.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC71	AN7062	Voltage Amp.
IC101	SVIμPC1018C	FM IF & AM Converter
IC102	SVIμPC1167C2	FM Det
IC301	SVIμPC1161C3	MPX
IC401	AN6558F	Equalizer
IC501, 802	AN6554 – M	Operation Amp.
IC502, 803, 804	SVINJ4559DSM	Flat Amp.
IC503 ~ 505	SVIBA6148	Power Meter (L, R) Stereoplex
IC781, 782	AN6882	Power Ind
IC801	MN1404STE	ICQ Controller
IC901	SVID1707G517	PLL Controller
IC902	μPB553AC	Pre-Scaler
IC904	AN6873N	FL Drive
TRANSISTORS		
Q71, 72	2SA1123 – R	Voltage Amp.
Q101 Ⓢ	2SC1675L1	FM IF Amp.
Q102, 106, 107, 113, 201, 301, 303, 304, 601, 602, 705, 803 ~ 807	2SC1815 – Y	IF Selector, FM/AM Station Det, FM/AM Selector, Regulator AGC, AM AGC, AM Station Det, AFC Muting, ICQ, Regulator Switching
Q103, 104, 109, 111, 305, 702, 906	2SA1015Y	IF Selector, FM/AM Selector, Muting Control, Regulator
Q603 ~ 606	2SC2631 – R	ICQ Control, Pre Drive
Q607, 608	2SA1123 – R	Pre Drive
Q609, 610	2SC2592 – R	Drive (New Class A)
Q611, 612	2SA1112 – R	Drive (New Class A)
Q613, 614 Ⓢ	2SC3280 – R	Power Amplifier
Q615, 616	2SA1301 – R	Power Amplifier
Q701, 704	2SD762 – R	Regulator
Q703, 707 Ⓢ	2SA684 – RNC	Regulator
Q706	2SC1383	Regulator
Q781	2SD762 – R	Regulator
Q801, 802, 810, 811	2SC1845 – E	Over Load Det, Relay Drive
Q809	2SA992E	ICQ Control
Q901, 902	2SC1815Y	Switching (Product Part No. is 2SC945P)
Q909, 911	2SD636	Buffer
Q910, 912	2SB641	Buffer
DIODES		
D104, 105, 204, 301, 303, 305 607 ~ 610, 901 ~ 904, 908, 909, 913 ~ 922, 930, 949	MA165	Switching
D601, 602, 611 ~ 614	MA27W – A	Switching
D201	SVDKV1236Z	Tuning (AM Variable Capacitor)
D203 Ⓢ	20A90	
D615, 710, 925	MA4160M	16V, Zener
D617, 618, 801 ~ 806 Ⓢ	MA167	Switching

Ref. No.	Part No.	Description
D603 ~ 606 Ⓢ	20A90	Switching
D621 ~ 624 Ⓢ	MA162A	Switching Rectifier
D616, 706 ~ 709, 713 ⚠	SVD1SR35200	
D701 ~ 704 ⚠	SVDS3V40	Rectifier (Product Part No. is SVDS3V20)
D712	MA4330L	33V, Zener
D714, 926	MA4062 – M	6.2V, Zener
D780	MA1160L	16V, Zener
D781 ~ 794	SVDAY5533K1M	L.E.D Peak Power Meter
D795 ~ 798 Ⓢ	MA162A	Switching (Product Part No. is SVD1S2473)
D911 Ⓢ	MA162A	Switching
D923	MA4075M	7.5V, Zener
D927 Ⓢ	MA162A	Switching
D951 ~ 958	LN846RP	L.E.D
COILS		
L201	SLQZ10G1 – D	Choke
L202 [PA, PE] only	SLQZ10G1 – D	Choke
L203	SLA2B1 – P	AM Antenna
L204	SL02B7 – P	AM OSC
L601, 602	SLQY07G – 30	Choke
L801	SLQX101 – 3M	Choke
TRANSFORMERS		
T101	SLI4C541 – Z	FM IFT
T102	SLI4C543 – Z	FM IFT
T201	SLI2C127 – M	AM IFT
T202	SLI2C413	AM IFT
T701 ⚠	SLT5Q141	Power Source
CERAMIC FILTERS		
CF101	SVFE107MM – A	FM, 10.7MHz (Red)
	SVFE107MM – D	FM, 10.65MHz (Black)
CF102, 103	SVFE107MZ2 – A	FM, 10.7MHz (Red)
	SVFE107MZ2 – D	FM, 10.65MHz (Black)
CF104	SVFE107ML – A	FM, 10.7MHz (Red)
	SVFE107ML – D	FM, 10.65MHz (Black)
	(Use pair ranks as same as CF101, 102, 103 and 104)	
CF201	SVFSFZ450F7L	AM, 450kHz
CRYSTAL		
X901	SVQ43U452 – D	4.5MHz, Counter OSC
VARIABLE RESISTORS		
VR201	EVN58AA00B54	Muting ON Level Adj. 50kΩ (B)
VR301	EVN75AA00B53	VCO Adj. 5kΩ (B)
VR302	EVN58AA00B55	Separation Adj. 500kΩ (B)
VR501	EWAPAAX05B54	Volume Control, 50kΩ (B)
VR502, 503	EWANA6X05C15	Tone Control, 100kΩ (C)

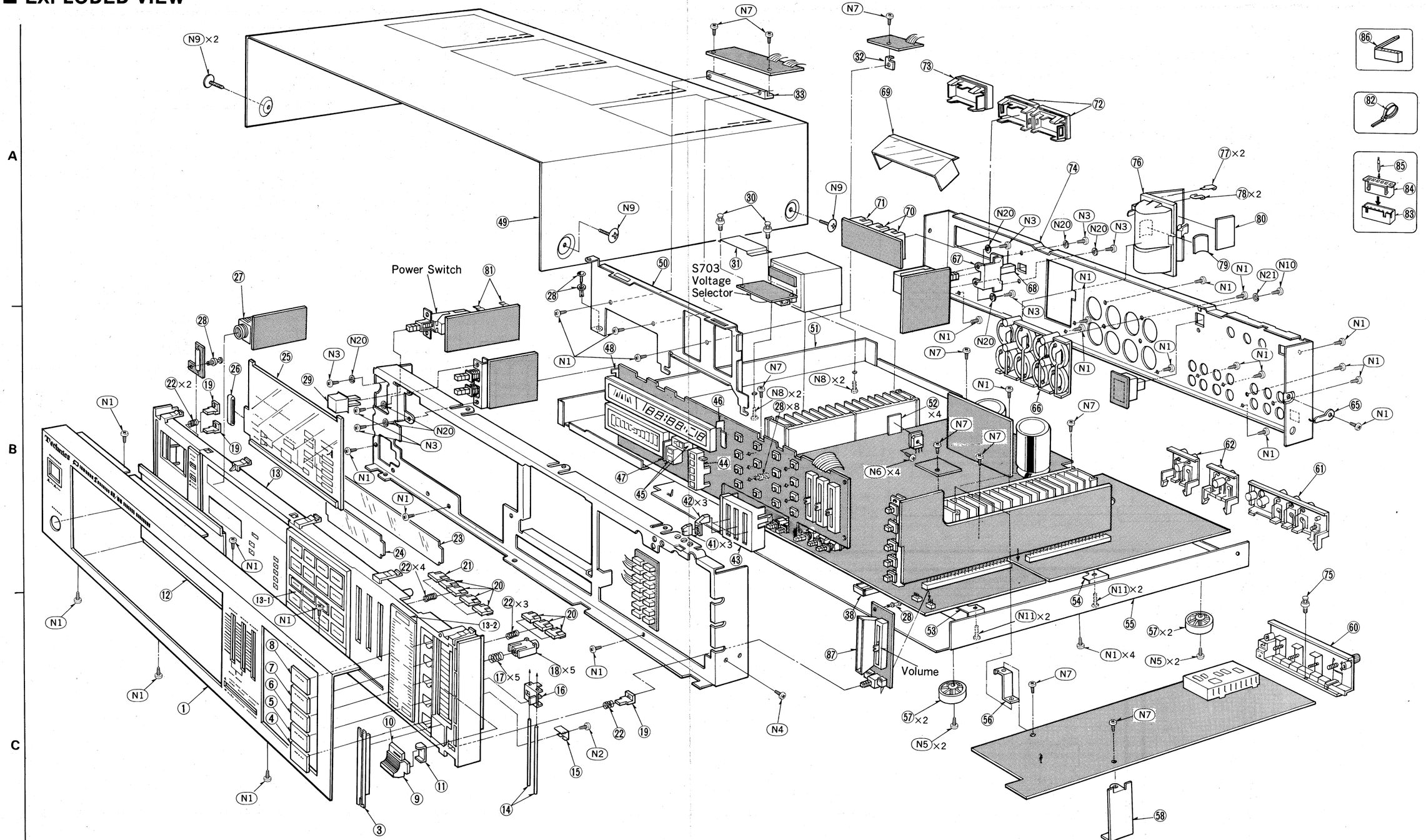
Ref. No.	Part No.	Description
VR504	EWANF5X05G15	Balance Control, 100kΩ (G)
VR601, 602	EVNK6AA00B52	ICQ Control Adj. 500Ω (B)
VARIABLE CAPACITOR		
CT201	ECRHA010A11	AM Antenna, Trimmer
FRONT END		
	SNVFE407E04	FM Front End
THERMAL DETECTOR		
PS801	SRPBG47101	60°C (140°F) Sensor
THERMISTERS		
TH601, 602	RRT104	100kΩ
FLUORESCENT DISPLAY TUBES		
FL	SAD8MT17ZB3	Digital Frequency Display
FL	SADBG247Z	Power Meter & Stereoplex Display
RELAY		
RLY601 ⚠	SSY126	Speaker Protection (Product parts No is SSY124)
COMPONENT COMBINATIONS		
Z601, 602	ERF3GBKR22N	0.22Ω (×2)
Z902	EXFP7331MW	330pF (×7)
Z903	EXBP87103K	10kΩ (×7)
Z904	EXBP85104K	100kΩ (×5)
LAMPS		
PL1, 3 ⚠	XAMR74S17	Volume Ind.
PL2 ⚠	XAMS6Q17 – 1	Power Ind.
FUSES		
F1 ⚠	XBA2C50TR0	250V, T 5A
F2 ⚠	XBA2C25TR0	250V, T 2.5A
SWITCHES		
S1 ~ 15	SSG13	FM/AM Preset Tuning, Tuning
S2-1 ~ 2-5	SSH556	Input Selector
S16	SSH1164	Mode Selector
S17	SSS43	FM/AM Allocation
S23, 30, 31	SSH1035	Tape Dubbing Stereoplex
S24, 25	SSH1033	Tape Monitor
S27 ~ 29	SSH1031	Subsonic Filter, High Filter
S31, 32	SSH2047	Speaker Selector
S701 ⚠	SSH1057 – 1	Power Source
S702	SSH1173	Speaker Impedance Selector
S703 ⚠	ESE37219	Voltage Selector

Ref. No.		Part No.	Description	
CABINET and CHASSIS PARTS				
1	○	SGWA850 – SP	Front Panel Ass'y	(1)
1	Ⓚ	SGWA850 – KC	Front Panel Ass'y	(1)
3	○	SGX7669	Ornament	(1)
3	Ⓚ	SGX7669 – 1	Ornament	(1)
4		SBC5730 – T	Button, TV/AUX3	(1)
5		SBC573N – T	Button, Video/AUX2	(1)
6		SBC5730M – T	Button, CD/AUX1	(1)
7		SBC573H – T	Button, Tuner	(1)
8		SBC573G – T	Button, Phono	(1)
9	○	SBD96	Knob, Volume	(1)
9	Ⓚ	SBD96 – 1	Knob, Volume	(1)
10		SBE295A	Holder, Volume	(1)
11		SHR5274	Spacer, Volume	(1)
12		SGU412	Transparent Plate	(1)
13	○	SGXA850 – SP	Grille, Sub Panel Ass'y	(1)
13	Ⓚ	SGXA850 – KC	Grille, Sub Panel Ass'y	(1)
13-1	○	SGK1845 – 1A	Sheet	(1)
13-1	Ⓚ	SGK1845 – 1B	Sheet	(1)
13-2	○	SGU413 – 1A	Indication Plate	(1)
13-2	Ⓚ	SGU413 – 1B	Indication Plate	(1)
14		SUG185	Connection Rod	(2)
15		SUW2849	Bracket, Connection Rod	(1)
16		SHR9731	Holder, Volume	(1)
17		SUS191 – 1	Spring, Input Selector Button	(5)
18		SHR9724	Holder, Input Selector Button	(5)
19	○	SBC483 – 6T	Button, Mode	
19	Ⓚ	SBC483 – 8T	Button, Mode	
			Speaker	(3)
20		SBC565 – 3	Button	(7)
21		SBC565 – 4	Button, Stereoplex	(1)
22		SUS257	Spring, Button	(11)
23	○	SDU197 – 1	Filter	(1)
23	Ⓚ	SDU197	Filter	(1)
24	○	SDU247	Filter	(1)
24	Ⓚ	SDU247 – 1	Filter	(1)
25	○	SDL86C	Indication Plate	(1)
25	Ⓚ	SDL86D	Indication Plate	(1)
26		SHG436	Rubber, Indication Plate	(1)
27		SJJ71B	Jack, Headphones	(1)
28		SHR415	Lock Pin	(12)
29		SBC627	Button, Power Switch	(1)
30		SHR415	Rock Pin	(2)
31		SMX611 – 1	Shield Plate	(1)

Ref. No.		Part No.	Description	
CABINET and CHASSIS PARTS				
32		SUW2013 – 1	Bracket, P.C.B	(1)
33		SUW2851	Bracket, P.C.B	(1)
38		SUW2839	Bracket, P.C.B	(1)
41	○	SBD97	Knob, Bass, Treble, Balance	(3)
41	Ⓚ	SBD97 – 1	Knob, Bass, Treble, Balance	(3)
42		SBZ9018	Connection Rod, Tone, Balance	(3)
43	○	SGX7668	Ornament	(1)
43	Ⓚ	SGX7668 – 1	Ornament	(1)
44		SMP374	Holder, LED	(1)
45		SMP375	Holder, LED	(2)
46		SMN1916 – 1	Holder, FL	(1)
47		SMN1916	Holder, FL	(1)
48		SMN1915	Holder, FL	(1)
49	○	SKC1130S1A	Cabinet	(1)
49	Ⓚ	SKC1130BB1	Cabinet	(1)
50		SMC1148	Shield Plate	(1)
51		SML139 – 2	Bracket, Power Transformer	(1)
52		SMX767	Insulation Sheet	(4)
53		SUW2840	Bracket	(1)
54		SUW2841	Bracket	(1)
55		SKUA850 – SP	Bottom Board Ass'y	(1)
56		SUW2854	Bracket	(1)
57		SKL249	Fodt	(4)
58		SUW2837	Bracket	(1)
60		SJF4419 – 6	Terminal Board, Antenna	(1)
61		SJF3059 – 14N	Terminal Board, Input	(1)
62		SJF3057N	Terminal Board, Tape	(2)
65		RJT202B	Terminal	(1)
66		SJF4815 – 1	Terminal Board, Speaker	(1)
67		SUW2848 – 2	Bracket	(1)
68		SBC527	Button, Speaker Inpedance	(1)
69		SMX515	Insulation Plate	(1)
70	⚠	SJS9232B	Socket, AC Outlet	(2)
71	⚠	SJS9231B	Socket, AC Inlet	(1)
72		SJS9232A	Cover, AC Outlet	(2)
73		SJS9231A	Cover, AC Inlet	(1)
74		SGPA850 – SP	Rear Panel Ass'y	(1)
75		SHR401 – 1	Lock Pin	(2)
76		SJB3005 – 1	Battery Case	(1)
77		SJC7	Terminal	(2)
78		SJC9	Terminal	(2)
79		SGK1569 – 1	Label	(1)
80		SQX4779	Label	(1)
81		SJT347	Holder, Fuse	(4)
82		SHR301	Clamper	(4)
83		SJT3213	Post (2 Pin)	(2)
84		SJS5215	Socket (2 Pin)	(1)

Ref. No.		Part No.	Description	
CABINET and CHASSIS PARTS				
85		SJT783	Terminal	(2)
86		SJS5327	Socket (3 Pin)	(2)
86		SJS5421	Socket (4 Pin)	(3)
86		SJS5519	Socket (5 Pin)	(1)
86		SJS5627	Socket (6 Pin)	(1)
87		SDH566	Refrector Plate	(1)
SCREWS				
N1		XTBS3 + 8BFZ1	Tapping with Detent, ⊕3×8	(30)
N2		XTB3 + 8G	Tapping, ⊕3×8	(1)
N3	Ⓢ	XSN3 + 6S	⊕3×6	(9)
N4	Ⓢ	XTS3 + 8B	Tapping, ⊕3×8	(1)
N5		XTW3 + 10H	Tapping, ⊕3×10	(4)
N6		XTW3 + 12J	Tapping, ⊕3×12	(4)
N7		XTW3 + 8H	Tapping, ⊕3×8	(7)
N8		XTB4 + 8F	Tapping, ⊕4×8	(4)
N9	○	SNE2095 – 4	Cabinet	(4)
N9	Ⓚ	SNE2095 – 5	Cabinet	(4)
N10		XSN26 + 5FZ	⊕2.6×5	(2)
N11	Ⓢ	XTB3 + 10BFZ	Tapping, ⊕3×10	(4)
N12	Ⓢ	XSN3 + 12S	⊕3×12	(2)
N13	Ⓢ	XWA3B	ϕ3	(2)
N14	Ⓢ	XTB3 + 8BFZ	Tapping, ⊕3×8	(6)
WASHERS				
N20	Ⓢ	XWA3B	Spring, ϕ3	(9)
N21	Ⓢ	XWA26BFZ	Spring, ϕ2.6	(2)
NUT				
N30	Ⓢ	XNH10E	ϕ10	(1)
ACCESSORIES				
A1	⚠	SJA168	AC Cord	(1)
A2		SSA267 – 1	Cord, FM Antenna	(1)
A3		SQX4885 – 3	Label	(1)
A4		SJP9215	Cord, TV Connection	(1)
A5		SSA902	AM Loop Antenna	(1)
A6		SQX4849 – 1	Label	(1)
A7		SMA231	Holder (B)	(1)
A8		SMA233 – 1	Holder (A)	(1)
A9		XTN3 + 10AFZ	Screw, Loop Antenna Holder	(2)
A10 [PA, PE]		SQF12128	Instruction Book	(1)
A10 [PC]		SQF12129	Instruction Book	(1)
PACKING PARTS				
P1	○	SPP701	Polyethylene Bag	(1)
P1	Ⓚ	SPP723	Polyethylene Bag	(1)
P2		SPS4451	Pad, Left Side	(1)
P3		SPS4452	Pad, Right Side	(1)
P4		SPG5045	Carton Box	(1)
P5		SGK1413	Label	(2)

■ EXPLODED VIEW



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